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Amateur Radio

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For the Experimenter and Radio Enthusiast

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1G4	7/6	6X5	10/-
1K5	7/6	7A6	10/-
1K7	7/6	7A8	10/-
1L4	10/-	7C5	10/-
1S5	10/-	7C7	10/-
2A3	10/-	7F7	10/-
2X2	10/-	7G7	10/-
3A4	10/-	7N7	10/-
3Q5	10/-	7W7	10/-
5R4GY	20/-	7Y4	10/-
5U4	12/6	12A6	10/-
6A3	10/-	12AH7	10/-
6A8	10/-	12C8	10/-
6AC7	10/-	12J5	10/-
6AG5	15/-	12SG7	10/-
6BE6	15/-	12SK7	10/-
6C4	12/6	12SQ7	10/-
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American Control Box BC1157B, contains one Weston 100 microamp. 2" meter (scale 0-30 Ma. 0-300v.), three Oak wafer switches, sundry toggle switches, Pots. In black crackle 12" x 9" x 3¾" case ..... 50/- each

A.W.A. Artificial Aerial Boxes, contain two 155 pF. variable condensers 2000 v.p., two Oak switches and Resistors, also five high voltage fixed condensers. In grey crackle steel case; height 8½", breadth 9¼", depth 16½"; weight 23 lbs. Few only, to clear 45/-

English Carbon Mike Transformers, new, 5/-

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WI BROADCASTS

All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official Broadcasts.

VK2WI: Sundays, 1100 hours EST, 7146 Kc. and 2000 hours EST 50 and 144 Mc. No frequency checks available from VK2WI. Intrastate working frequency, 7125 Kc.

VK3WI: Sundays, 1130 hours EST, simultaneously on 3573 and 7146 Kc., 51.016 and 146.25 Mc. Intrastate working frequency 7135 Kc. Individual frequency checks of Amateur Stations given when VK3WI is on the air.

VK4WI: Sundays, 0900 hours EST, simultaneously on 3560 and 14342 Kc. 3560 Kc. channel is used from 0915 hours to 1015 hours each Sunday for the W.I.A. Country hook-up. No frequency checks available.

VK5WI: Sundays, 1000 hours SAST, on 7146 Kc. Frequency checks are given by VK5MD and VK5WI by arrangements only on the 7 and 14 Mc. bands.

VK6WI: Sundays, 0930 hours WAST, on 7146 Kc. No frequency checks available.

VK7WI: Sundays, at 1000 hours EST, on 7146 Kc. and 146.5 Mc. No frequency checks are available.

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EDITORIAL

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"RETROSPECTIVE THOUGHT"

Back in January, 1926, when a majority of present-day Hams were probably neither interested in Amateur transmitting nor out of swaddling clothes, some important events were taking place which have effected our very existance today—more than twenty-five years later.

A few years before that almost "forgotten age," broadcasting on the bands now accepted Internationally as the Broadcast Band for Commercial and National entertainment, was just acquiring its maximum momentum and sweeping everything before it. The 200-metre Amateurs had been "broadcasting" for some time and their transmissions were commencing to interfere with the public's new entertainment field. Since little was known of Amateurs by the layman public in those early years, the sudden knowledge that such people existed was an excuse to lay the blame at their feet for every form of squeal, static, line noises and any other problem that interfered with the broadcast listeners' receivers.

By dint of arduous representation at Radio Conferences, the Amateur established himself in his own right as "the man who pioneered the frequencies beyond the broadcast band" where officialdom said nothing could be transmitted. Awakened to this fact, the sitting members at the various Radio Conferences exhibited respect for the organised Amateur movement and such phrases as "Now that the Amateurs have shown us how to operate on short waves . . ." and "These Amateurs can give us valuable information on the performance of radio waves on the higher frequencies . . ." were commonly heard from the mouths of the hundreds of experts who came in with broadcasting.

It was at this time in 1926 when the Amateur was recognised at Radio Conferences as one of the most important factors in the field, and things respecting short waves in those days were just not done without consulting the Amateurs. We can safely say then, that it was about this time that the Amateurs all over the world really became recognised, and although the general experimental side of the science has passed from the hands of the Amateur movement to the back-room-scientist and Government and National research laboratories in many respects, the Amateur himself still continues to represent the movement by virtue of his "high place" in the many and varied posts embraced in the radio and electronic field today.

But what factors gave such eminence to the Amateur and his knowledge in those early days? Perusal of records of the early Amateurs brings to light three major reasons for this—the Amateurs' contributions to the art; his high and absolutely fair standard of conduct in his public relations; and his policy of complete reasonableness in his negotiations with the public and the powers that be.

It was said then that these were policies that had always paid, and always would pay. The past twenty-five years has not only proved this to be an indisputable fact, but has given greater eminence in modern guise to the Amateur movement as each year has passed into history.

It is the personal problem and responsibility of each and every one of the present-day Amateur fraternity to carry this banner of eminence ever forward to eternity. It is as important as the Amateurs' Code itself.

FEDERAL EXECUTIVE.

THE CONTENTS

Short Wave Receiver Selectivity Problems and the Double Crystal Filter as the Answer—Part Two 2
Amateur Bands Available 5
DX C.C. Listing 5
The Complete Amateur—Aerial Tuning Unit and Power Packs 7
21 Mc. on the BC348 Receiver .. 9
Hints and Kinks 11
An Easily-Built Frequency Meter for the Audio Range 13
Amateur Call Signs 13
DX Activity by VK3AHH 14
Ross A. Hull Memorial V.h.f. Contest 1953-54 Results 15
Fifty Megacycles and Above .. 16
Federal, QSL, and Divisional Notes 17
Obituary 19

Short Wave Receiver Selectivity Problems and the Double Crystal Filter as the Answer

PART TWO

BY H. F. RUCKERT,* VK2AOU

THE DOUBLE CRYSTAL FILTER

The question now is, is there a way at all for the Ham who has to build his own modern receiver, who cannot spend a fortune for his hobby, and who does not want to give up in the race against QRM and for better selectivity? Yes, there is a way—the double crystal filter, which gives nearly the same performance as the mechanical filter and has some advantages compared with all the other methods which make the double crystal filter very convenient.

The curves No. 3 and 4 show the result the writer measured on his home built receiver using the Bendix BC221 frequency meter on 80 metres, a logarithm calibrated vacuum tube volt meter and a signal generator with an attenuator which was calibrated in neper. Everyone who can align a superhet in the proper way should be able to get this filter going, and no special equipment is necessary to do this job with good results.

This is the other extremely important point. The circuit works equally well and with only some difference in skirt selectivity and maximum bandwidth at any i.f. from 100 Kc. to 2 Mc.

That means that even a single conversion superhet could take advantage of the performance this filter can give when an i.f. of 1.8 Mc. has to be used to get enough image rejection. Of course it is still safer to use double conversion as described earlier and to operate this double crystal filter with the second i.f. at 300 to 1,000 Kc. We do not need triple conversion with Q5-er or audio filter of any type, because this filter gives all the selectivity we need for phone and c.w. reception. We need only two valves like 6AU6s in the second i.f. amplifier or three valves of the type 6SK7 with reduced screen voltage, plus the mixer as in any double conversion amplifier.

Pot type iron core coils and bobbins are available here, so that it is easy to wind the special coils with the necessary taps. The four-gang condenser with about 7 to 15 pF. capacity with insulated rotors and stators can be replaced by small ceramic capacitors and a ganged shielded switch for several selectivity grades. Some v.h.f. variable capacitors may be suitable if two two-gang condensers can be ganged. The four capacitors must be such that two have increased and two decreased capacity when the capacity is changed to get different selectivity grades. If it is not possible to obtain the right variable condenser, then fixed capacitors for two phone and two c.w. selectivity positions may be sufficient. Again fixed capacitors should be switched in such a way as indicated by the arrows in the circuit to get the same effect as if the rotors of variable condensers are 180° in opposite positions.

* 119 Evaline Street, Campsie, N.S.W.

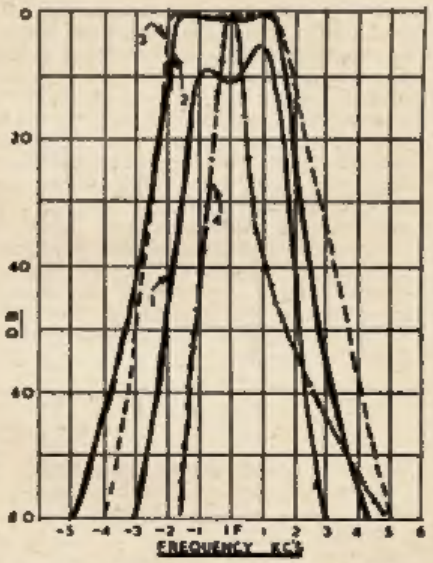
It is not costly to get two i.f. filter crystals which should be ground within 100 c/s. to the same frequency as series resonators. We see from the diagram that we can adjust with this filter, as it was built by the writer, with the variable four-ganged condenser, any bandwidth continuously from 0.5 to 4 Kc., which is a great advantage over any other method described above.

The Telefunken receiver E52 allows us to vary the bandwidth from 200 c/s. to 10 Kc. at an i.f. of 1 Mc., but at the wider bandwidth the top of the response curve is not as flat as is desirable. Note also that the gain of the second i.f. amplifier remains constant at any selected bandwidth. It is not necessary to combine a cathode bias potentiometer with the bandwidth control as is usually done with Q5-er's, so the S meter readings are always true. There is practically no difference in the effective bandwidth with the a.v.c. on or off, as many superhets with less selectivity show, where it is necessary to switch the a.v.c. off to get maximum selectivity.

The flat response curve is ideal for the reception of the carrier and only one sideband as was outlined above, and is the best way to cope with the QRM problem. One sideband or the other may be selected as desired or necessary. As a matter of fact it is general practice to use only one sideband, setting the bandwidth to 2 to 4 Kc. to have the necessary good readibility for phone reception. Even in the sharpest position, the small but flat top of the curve shows that this double crystal filter will not tend to ring, so we have the full advantage of the right selectivity.

With the b.f.o. on for c.w. reception we always have excellent single beat note reception without the necessity of trying to adjust the phasing condenser to the right spot, because here the phasing condensers are only once tuned and set to a fixed value to get the right maximum bandwidth and flat top with sharp skirts. The b.f.o. may be connected behind the last crystal filter as is usually the case.

Response Curves of Different I.F. Amplifiers



1. Nine tuned circuits at 50 Kc. "QST," March, 1953. A.R.R.L. design, sideband channel.
2. Magnetostriction filter at 455 Kc. Collins 75A III. "QST," February, 1953.
3. Double crystal filter, 3.5 Kc. flat top at 352 Kc. i.f. Position wide, a.v.c. on.
4. Double crystal filter, 0.4 Kc. at 352 Kc. Position sharp, a.v.c. on.

How Double Crystal Filter Works

There is no difference to the well known crystal filter with only one quartz in principle. We have again the bridge circuit with the phasing condenser of 10 to 80 pF. The size depends on the position of the coil taps and the crystal holder capacity. We also can adjust in this circuit the neutralisation of the crystal capacity with the phasing trimmer so that we get a pole (anti-resonance point) close to the resonance point (peak) and at the low or high frequency side of the resonance frequency. We have used this effect so far to reject QRM c.w. stations, but now this is also used to get such a steep skirt that we can reject one sideband. The attenuation is 60 db or more per kilocycle detuning.

The second filter may be tuned so that the other pole appears at the other side of the response curve. With the taps for the plate, grid and crystal, it is possible to match the Q of the crystal in such a way to the tuned circuit that no sharp peaks of the crystal response appear which would not give the desired flat top. It is therefore not difficult to get a flat top on the resonance curve by making small adjustments with the phasing trimmers and the slugs of the i.f. filter coils.

The selectivity control works in the same way as described in the A.R.R.L. handbook for many years as it is at the ordinary crystal filter arrangement.

The crystals are damped to a certain degree when the tuned circuits are tuned on the crystal frequency and the function of the sharp selectivity of the crystal is more pronounced when the parallel circuits are tuned off the crystal frequency. The smaller bandwidth results when two circuits are tuned to the higher and two to the lower side of the crystal frequency. If all four circuits were tuned to the same side, we would get two peaks, one from the crystals and the other formed by the many equally detuned i.f. circuits.

It is quite possible that even better results may be achieved than the writer obtained at this stage when a few more different taps can be tried out. This may be important when the Q of the crystals is not the same as it seems to

be in my case, so we did not get the same sharp attenuation of both side frequencies as desired.

It should be understood that we no longer tune the stations in for maximum S meter reading because there is no clear peak as our old receiver showed. By tuning close to the sideband of a phone station we get at first one sideband more or less in, and we hear the voice distorted because the carrier is very much attenuated and the higher modulation frequencies appear very much overmodulated. The S meter is unstable being only affected by the sideband (speech). Tuning two kilocycles further, for example, brings the carrier within the i.f. filter channel where one upper corner of the response curve is, and now the reproduction of the voice is perfect as far as the receiver is concerned and just as good as the transmitter is modulated. Tuning the carrier more to the centre of the passband, the S meter reads the same strength because the response curve has the flat top. We amplify both sidebands more. Since the whole channel has only a flat top of about 4 Kc., there are now only sideband frequencies reproduced which are below 2 Kc. (and that is not very good for voice transmission). Twice the audio response range with only one sideband was better to read. Going again 2 Kc. further, we have set the carrier now close to the other corner of the response curve. We have changed the sideband, and the other sideband will be reproduced alone. The S meter still reads the same signal strength. For c.w. reception, it may be mentioned that we will not get any beat note at all if the b.f.o. is tuned too far off frequency.

There have been several types of widely used communications receivers built by Telefunken in Germany with this double crystal filter over the past 15 years. The high degree of selectivity makes temperature compensation important, or drift of oscillators, or i.f. filters would cause too great a loss in sensitivity and selectivity because the proper alignment would be lost. That is why these receivers use ceramic capacitors for temperature compensation of all tuned circuits.

A radio compass receiver uses this filter at 130 Kc. The medium wave receiver Type C works with the same crystal filter at 352 Kc. and the Type E52 has this filter at 1 Mc. This 15-valve receiver has five ranges and was built with 370 capacitors, most of which are ceramicons. Similar effects have been achieved with this filter circuit by using crystals at 1875 Kc.

Aligning The Filter

If we are not lucky enough to own an r.f. voltmeter and a signal generator, this by no means stops our plans. We connect a variable condenser to the b.f.o. which can be calibrated with any broadcast receiver, or our grid dip meter to tune the b.f.o. over the i.f. (crystal frequency) ±20 Kc., and we have all the gear we need.

Instead of the v.t.v.m. we can use the S meter or any 5 Ma. meter connected between B+ and the plate current lead of one of the valves that is connected to the a.v.c. line, forming an r.f. volt meter (indicator).

Make a connection from the plate of the b.f.o. with a shielded cable via 10 pF. to the grid of the last i.f. valve, and replace the grid circuit of this stage by a 10,000 ohm resistor as a grid leak. The last i.f. filter is now tuned in the usual way. The one circuit of the last filter, which is not tuned, may be damped by a 10,000 ohm resistor if the coupling is tighter than critical.

The ceramic filter capacitor may be changed so that the required tuning range is available by tuning the iron core (slug) only.

Now we can connect the b.f.o. in the same way on the grid of the second i.f. valve, and the second Q-filter is connected back to the grid of the last i.f. valve which is the third valve of the second i.f. amplifier. By tuning the b.f.o. we soon will see the S meter rise upwards when tuning through the frequency of the second crystal, and we use this frequency for alignment.

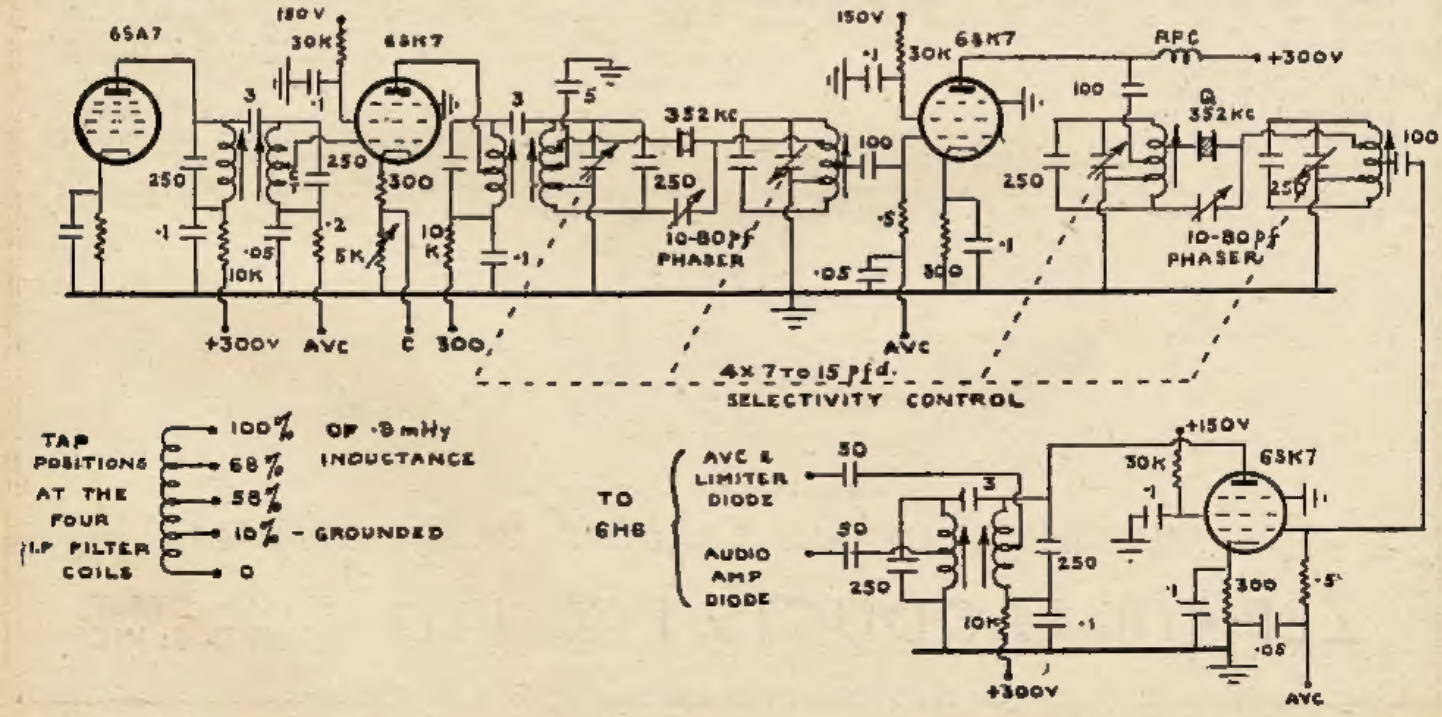
The LC circuits at the second crystal have to be adjusted for maximum S meter reading in the common way. The second phasing condenser (trimmer) is at about centre position. We will get now a fairly sharp single resonance point. Then we tune carefully the second phasing trimmer as we used to do with our old crystal filter set-up. Set the pole close to one side of the resonance frequency where the crystal holder capacity is nearly neutralised by the phaser. Tuning the b.f.o., we will now have on one side the desired sharp skirt of 60 to 80 db attenuation with 1 Kc. detuning of the b.f.o. Repeat the same procedure with the first crystal filter.

It may be now necessary to reduce the signal input from the b.f.o., which could be done with a simple resistor or capacitor voltage-divider.

The next step in alignment of the first crystal filter is easiest done by replacing the second crystal with a 10 to 20 pF. capacitor which should have the same capacity as the crystal plus holder. A grid dip meter may be used to check the capacity. The phaser may be adjusted now in such a manner that the pole occurs at the other side of the resonance frequency of the crystal compared with the second filter already aligned.

During the tuning of the LC circuits at or close to the crystal frequency, the bandwidth control should be set in the following way: No. 1 in 15 pF., No. 2 out 7 pF., No. 3 in 15 pF., No. 4 out 7 pF. Any capacitor type with about 7 to 15 pF. capacity variation may be used.

If it is not possible to obtain the four-gang capacitor with insulated rotors and



MODEL "1XA" CRYSTAL MICROPHONE INSERT

AUSTRALIAN MADE — — FOR AUSTRALIAN CONDITIONS

FITTED WITH PLATED REAR SHIELD TO ELIMINATE HUM PICK-UP

- **Patented crystal unit guarantees outstanding efficiency and performance.**
- **Protected against ingress of moisture with approved moisture sealed crystal element.**
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- **Will not blast from close speaking.**
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- **The only unit available with a genuine sintered metal filter.**
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- **Australian made throughout.**
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TECHNICAL DETAILS

Rochelle salt crystal microphones are perhaps the most widely used for all types of service where quality speech and music reproduction at high output levels is a requirement. They are dependable in performance and when fitted with the appropriate "Zephyrfil" filter, their frequency response may be adjusted to suit any application or requirement.

This crystal microphone requires to be terminated with a high value parallel load of the order of 1 to 5 megohms for best results.

The mass of the moving parts is small, hence the sensitivity is high and a high efficiency is achieved.

Light gauge solder lugs are provided so that excessive heat in soldering will not be transmitted to the crystal element.

When mounted in a microphone cage, it is recommended that the insert be suspended in rubber, to eliminate shock and vibration.

One of the connecting lugs is directly connected to the case and care should be taken to solder the metal shield of the microphone cable to this solder lug, keeping the unscreened portion of the centre conductor as short as possible to eliminate hum pick-up.

All crystal elements are mounted on high grade suspension pillars, being fixed thereto with a good quality cement, thus ensuring stability and long life.

Case 1½" diameter (rear), ¾" thickness, 1-13/16" overall diameter (front) with filter fitted.

Frequency Response = 60-6,500 c.p.s.
Output Level = —45 db (0 db = 1 volt/dyne/cm²)
Impedance = Model 1XA Grid 1 — 5 megohms.

Approximate Frequency Response Curve

AVAILABLE FROM ALL LEADING TRADE HOUSES

ZEPHYR PRODUCTS PTY. LTD. 58 HIGH STREET, GLEN IRIS, VIC.

stators plus the possibility of setting two rotors in 180° position to the others, then the circuits may be changed in the following way: We may have only two separate two-gang variable capacitors where only the stators are insulated. It may be possible to gang these in a simple mechanical way. The insulated stators have to be connected as is shown in the circuit. The uninsulated rotors are set in such a position that one of the two-gang capacitors is at minimum and the other on maximum capacity. The rotors should be able to turn freely through the full circle. The rotors can be connected to the tap of the four coils which is at zero i.f. potential.

In this case, the a.v.c. voltage is brought to the grids of the last two i.f. valves via 1 megohm resistors and using 100 pF. coupling capacitors between the grids and the tuned circuits.

The plate voltage of the second i.f. valve could reach the plate via a 2.5 mH. choke and a coupling capacitor.

The circuit will not be affected by using these alterations.

After setting the phasing trimmers a slight retuning of the connected i.f. is necessary. Then connect the b.f.o. to the second mixer grid as described before with the resistor as grid leak. The second oscillator may be put out of action. We can now align the first i.f. filter as we did before with the last filter.

By small adjustments of the phasing trimmers (±1-5 pF.) and by detuning of one to three tuned i.f. circuits, we will get the desired maximum bandwidth of three to four Kc. and also the flat top. The detuning of the filters should be within 4 Kc. only. This last job is a matter of patience. Tune the b.f.o. as the signal generator again and again over the i.f. band and do the retuning very carefully and always alter only one slug or trimmer at a time so as not to get confused. Watch each time the S meter reading to see if the response curve already shows the flat top. When this is achieved and the S meter reads a nearly constant strong signal (within 2 to 4 db) over a certain tuning range of the b.f.o., the trimming is finished.

The skirt selectivity should be at least as good as the curves of the graph indicate.

If we have provided a few extra taps on the coils for connecting the crystals at different impedance points, we may get a better skirt selectivity and a flat top of the desired bandwidth may be obtained.

The two phasing trimmers remain now in a fixed position, which is in contrast to the old single crystal filter set-up. If we want the effect of the old phasing method, we simply tune the main dial so that the received station comes close to one of the corners of the response curve so as to attenuate the undesired signal in the same way.

Results

Since the writer uses this filter in a home-made 20 valve double conversion superhet which is tunable on Amateur bands only, he does not like to work with the old receiver (16 valves double conversion with normal single crystal filter), which was quite a good receiver, 80 per cent. of all phone QRM has disappeared and there is also a lower noise figure now.

There are only a few more i.f. filters and one additional i.f. valve incorporated than before. When other stations often say, "sri QRM, pse QSY, etc." we just tune the carrier and the not interfered sideband in, and with very slight adjustment the QRM station will very often be brought under control.

It is surprising that such a fine circuit has not yet found more use in Amateur radio receivers since the industrial manufacturers had such excellent results in this way for a long time. The main thing is that, no longer should the QRM situation force us to give Ham Radio, and especially phone, away.

If our first and other oscillators work with the necessary stability, we can use the same receiver also for reception of single sideband transmissions. If both sides of the skirt have extremely high selectivity (steepness), it will be difficult to receive n.b.f.m. stations by tuning them on the slope of the resonance curve if we do not have a n.b.f.m. adaptor to do this job properly.

Remarks

The writer built the filter at first with only one i.f. valve on a piece of bakelite to try out the method of alignment. This work has to be done in a clear way as outlined above. It is absolutely hopeless to solder the last component in the receiver, plug the antenna in, call CQ DX and tune the dial in the hope we might get a good signal through. The only safe and quick way is to do the aligning work systematically. Those who would like to build this circuit and may have further questions, may contact the writer whenever they hear VK2AOU on 20 metre phone, or on Mondays at 5.30 p.m. at 7.06 Mc. or 3.7 Mc.

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AMATEUR BANDS AVAILABLE

*1.84— 1.86	Mc.	†288— 296	M.c
3.5 — 3.8	„	†576— 585	„
7 — 7.15	„	1,215— 1,300	„
14 — 14.35	„	2.300— 2,450	„
21 — 21.45	„	5,650— 5,850	„
26.96— 27.23	„	10,000—10,500	„
28 — 30	„	†21,000—22,000	„
50 — 54	„	†30,000 Mc. and	
144 —148	„	Above.	

* Available for emergency network purposes only. Normal Amateur activities are not permitted in this band.

† Temporary allocations.

DX C.C. LISTING

PHONE

Call	No.	Ctr.	Call	No.	Ctr.
VK4HR	12	172	VK4RT	22	124
VK3BZ	3	168	VK4WJ	17	122
VK4FJ	21	164	VK4JP	8	114
VK3EE	10	163	VK4DO	20	112
VK6RU	2	160	VK5MS	24	109
VK3JD	1	155	VK4CB	28	109
VK4KS	9	152	VK3WM	29	109
VK6KW	4	150	VK3HO	25	103
VK3LN	11	141	VK2ADT	13	102
VK3AWW	14	140	VK2AHA	15	102
VK3JE	7	139	VK6PJ	19	101
VK4WF	16	137	VK3IG	5	100
VK3ATN	28	136	VK3GG	13	100
VK4RW	23	127	VK5LC	27	100
VK6DD	6	126	VK3AUP	30	200

C.W.

Call	No.	Ctr.	Call	No.	Ctr.
VK3BZ	8	214	VK5FH	31	134
VK3KB	10	200	VK4RF	11	125
VK4HR	6	195	VK3YD	27	123
VK3FH	15	191	VK3EK	3	122
VK4FJ	29	191	VK3JI	25	118
VK4EL	9	175	VK3HT	37	117
VK3CK	26	160	VK5PL	38	117
VK5RX	23	159	VK3UM	12	116
VK2EO	2	152	VK7LJ	24	114
VK3CN	1	151	VK4DA	7	113
VK2GW	16	151	VK7LZ	17	112
VK6RU	18	150	VK4RC	13	107
VK6SA	23	150	VK2XK	41	107
VK5BO	33	150	VK6KW	40	104
VK4QL	36	145	VK2YC	34	103
VK3XO	43	144	VK3APA	14	101
VK3VW	8	143	VK3NC	19	101
VK2QL	5	142	VK2OA	32	101
VK4DO	20	141	VK7RK	22	100
VK3XK	30	138	VK2AEZ	35	100
VK3JE	21	137	VK3RJ	42	100
VK3YL	39	135			

OPEN

Call	No.	Ctr.	Call	No.	Ctr.
VK3BZ	4	224	VK7LZ	23	116
VK4HR	7	210	VK3VQ	45	116
VK4FJ	32	206	VK2ASW	53	116
VK3JE	12	198	VK3JA	43	114
VK6RU	8	198	VK2ADT	14	113
VK2NS	16	195	VK3HO	38	111
VK3HG	3	181	VK3PG	47	111
VK4EL	19	175	VK3MM	49	111
VK6KW	13	171	VK4RC	21	110
VK2DI	2	170	VK3ZB	34	110
VK3KX	1	167	VK2XK	54	109
VK4KS	24	167	VK2ZC	25	108
VK4DO	15	165	VK3KR	56	107
VK3AWW	45	150	VK2YL	11	106
VK9GW	48	150	VK3AWN	26	105
VK3LN	29	144	VK6WT	58	105
VK5FL	25	143	VK2VN	18	104
VK4WF	40	141	VK4UL	27	104
VK3MC	5	139	VK6PJ	44	104
VK3OP	19	137	VK6PW	50	104
VK6DX	42	137	VK2HZ	17	103
VK4RW	53	137	VK7KB	30	103
VK6DD	22	136	VK2TI	37	103
VK3HT	41	135	VK3YS	57	103
VK2ADE	28	133	VK7RK	31	102
VK2AHA	9	128	VK4TY	35	102
VK2AHM	20	125	VK5HI	51	101
VK3JI	33	119	VK2ACK	6	100
VK5LC	55	118	VK2TG	39	100

THE COMPLETE AMATEUR

BY TOM ATHEY,* A.I.R.E.

SECTION FOUR

Aerial Tuning Unit

This unit is to be mounted in the shack, but as far away from the transmitter as is convenient to the operator.

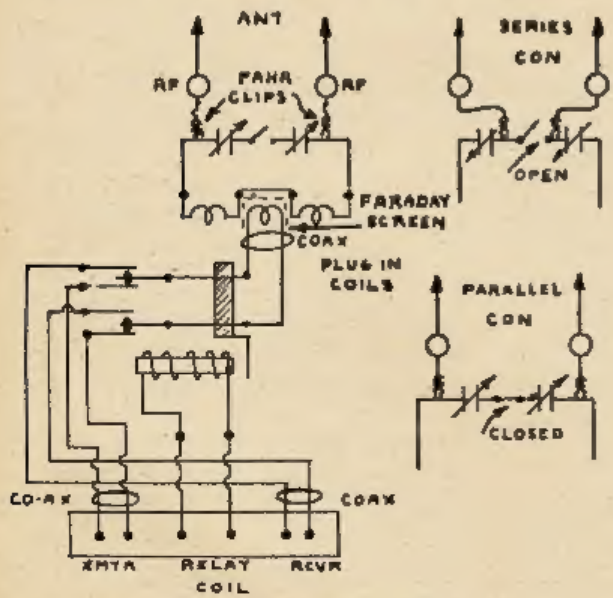
The unit consists of a balanced coil with the link input swinging between a Faraday screen. Thus any unwanted harmonics may be effectively cancelled before they are passed on to the aerial via the feeders.

Provision has been made for the use of either series or parallel tuning, by means of small aligator clips, as is self explanatory in the diagram.

Any type of double-pole double-throw relay can be operated ss an aerial change over switch. I have procured an a.c. relay with a 110v. rating, ex disposals, and it is ideal for the job. Without excitation, the aerial is connected to the receiver, but immediately the transmitter is switched on, the aerial changes over to the transmitter.

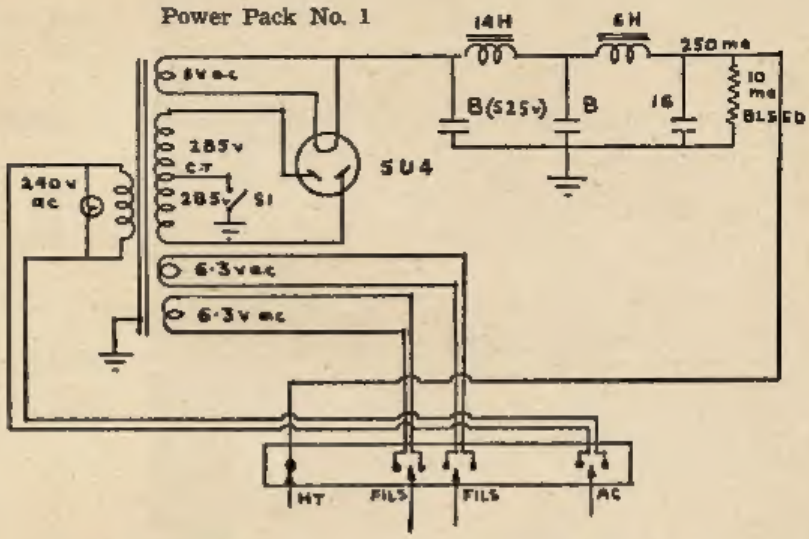
Switching of coils would result in some loss here, so plug-in coils are used. If the unit is placed near the operating position, very little inconvenience would result. R.f. indicating meters would look nice, but ordinary pea lamps in each leg of the feed line are quite suitable, provided they are shunted by wire of a suitable resistance so that only a small portion of the r.f. is passed through the lamps.

*Ex-Instructor Qld. Division W.I.A. Classes; 41 Mountford St., New Farm, Brisbane.



Aerial Tunit Unit

Power Pack No. 1



SECTION FIVE A

Power Pack No. 1

Chassis: 17" x 10" x 2"
Panel: 19" x 5 units
Valve 5U4G or 5Z3

This is a standard power pack, having a somewhat better filtering system than normally encountered. The transformer should have adequate ratings, and have two filament windings as well as one for the filament of the rectifier. As this pack has to supply high tension for both the multipliers and the speech amplifiers a transformer having a rating of not less than 200 Ma. should be used, even if the rating is subject to I.C.A.S. conditions. There is no need to have a high voltage rating as no voltage required is greater than 250 volts d.c. Any transformer from 285v. to 315v. either side of centre tap will suffice. A pilot lamp across the 240 a.c. input will indicate that the pack is alive and should not be touched in that condition.

This pack uses a hard valve, so condenser input is satisfactory.

SECTION FIVE B

Power Pack No. 2

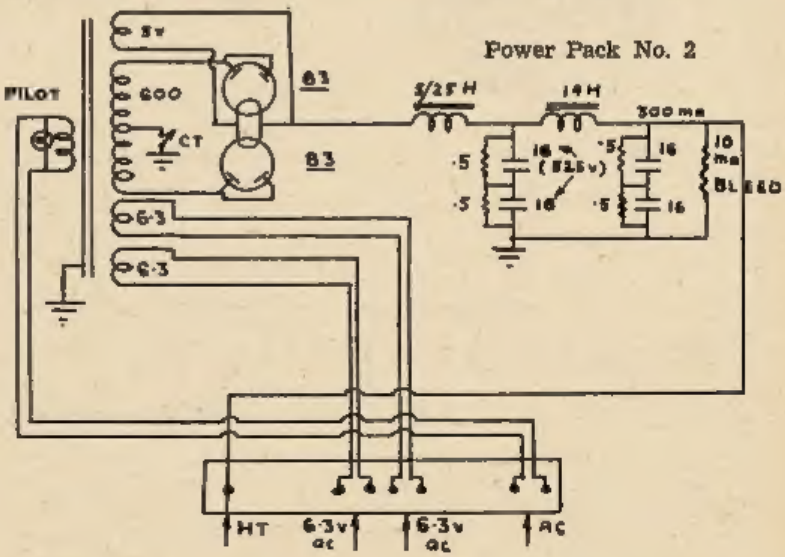
Chassis: 17" x 10" x 2"
Panel: 19" x 6 units
Valves: Two 83s

This pack has to supply the high tension to the modulator plates and the final valve. Consequently the regulation must be of reasonable consistancy. Therefore, choke input has been decided upon, using a swinging choke in the first stage of the filter circuit.

The transformer will be reqiured to provide 100 Ma. to the final 807 and

(Continued on Page 9)

Power Pack No. 2



[When the centre tap of the transformer is opened as shown, it is advisable to also break the electrostatic shield connection to ground at the same time to avoid insulation breakdown. This can be done by connecting the electrostatic shield to c.t. on the transformer.—Tech. Ed.]

21 Mc. ON THE BC348 RECEIVER

BY L. ELIASON,* VK3ALE

THE 21 Mc. band can be covered on the tuning range of a BC348 by converting the present low frequency end of the tuning. The 200-500 Kc. range is of very little use, so by changing the coil coverage, another Amateur band can be made available at the flick of a switch.

Before any work is carried out, it is a good idea to have a complete picture of how the coils and associate components are arranged in the circuit. For those who do not have a circuit, a careful study of the 20 metre coils in each box will show exactly how to go about the job.

Fig. 1 gives a picture of circuits involved for each coil. L1 is the grid coil, L2 is the plate coil, and L3 is used only on the oscillator for the purpose of injection. C1 is the band-set, C2 limits the minimum capacity of C4, C3 limits the maximum capacity of C4, and C4 is the main tuning condenser.

OSCILLATOR

The oscillator coil box was tackled first, here the old coil was stripped and carefully note how the windings are used. The former, it will be noted, is the same as those used in all the other coils in this box. The hot end of the grid winding starts from the terminal on the right, near the mounting hole when looking down from the open end of the coil former. Next to this is the terminating point for the cathode coupling winding. On the left of the mounting hole is the termination of the plate winding; on the open end of the former to the left is the HT+ terminal and on the right the a.v.c. or cold end of the coil.

Using wire of about 18 gauge, wind on six turns, spaced to ¼". Now as per Fig. 1, close-wind four turns of about 30 gauge wire, spaced about 1/16" from L1; one end is terminated on the cold end of L1, the other goes down the inside of the former to the centre lug.

Over the cold end of L1 wind some insulating material, then wind over this three turns of No. 30 gauge wire. This completes the new oscillator coil.

C3 in the old set-up will be found to be a fixed condenser of 80 pF. and a 3-30 pF. trimmer. Clip these out, do not try to use a soldering iron in the boxes as heat makes the insulation of the wires peel back at a fast rate of knots. In their place, solder a small 25 pF. condenser, also solder a 20 pF. condenser across the present C1. This completes the oscillator box, except for putting the combination to the right frequency.

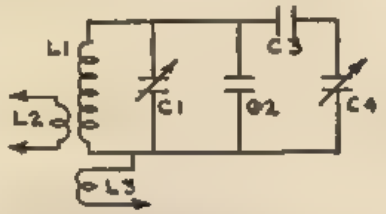
DETECTOR AND R.F.

To re-wire the detector and r.f. boxes, it will be found that all the present wiring associated with the coils and trimmers (50 pF.) will have to be removed. The new set-up calls for 25 pF. trimmers. If replacements are not on hand, just remove four rotor and stator plates and you will have the required capacity.

Both coil formers are useless for 21 Mc. and new single-hole mounting formers will have to be obtained. The author used some from the oscillator sections of a TA12. L1 has six turns of No. 18 gauge, spaced to ¼", and L2 has four turns, close wound over the cold end of L1. Once again a close inspection of band six coil and wiring will show it all.

On the switch wafer nearest the open side of the boxes, it will be noted that the first three lugs go to the original coil. Short the second and third one, the lead from the second one going down to the lowest wafer has to be snipped out and a 15 pF. condenser soldered in. Across the new condenser C1 (25 pF.), solder a 40 pF. condenser. Snip out the extra length of lead that was used to take one end of the 2 pF. coupling condenser back to the plate switch.

If your wiring checks with that of band six, all should be well in the two boxes.



C1—15 pF. Three required.
C2—40 pF. Three required. 30 pF. in osc.
C3—15 pF. Three required. 15 pF. in osc.
C4—Main tuning condenser.
L1—Osc. 6 turns ⅜" long, ⅜" diam., 18 gauge. R.F. 7 turns, ⅜" long, ⅜" diam.
L2—Osc. and R.F.: 4 turns close wound over cold end of L1, 30 gauge.
L3—Osc. only: 4 turns close wound 30 gauge, 1/16" above L1.

ANTENNA COIL BOX

Now for the antenna coil box. A study of this will show that the general layout is somewhat different to the other two r.f. boxes, for a start. Band five band-set trimmer is on the rear wall, but a mounting position was in place next to band-six trimmer in the author's receiver, so to bring this box in line with the other two, a bit of re-arrangement was carried out.

Band five trimmer just made it to the front of the box, band three trimmer then went to where the band five one was. Now mount a new 25 pF. trimmer where band three was; this makes the placement of all band-set trimmers in the three r.f. boxes identical. The rest of the wiring is as for the other two r.f. boxes, except that the coil is only a single winding.

ALIGNMENT

After installing all the boxes, a check with a g.d.o. will put you on the band. Using a signal generator or your v.f.o., set 21 Mc. on the low frequency end of the scale. Peak up the coils and hear the signals roll in. If you cannot hear anyone, call CQ, you will most likely get an answer. If not tune up above 21.450 Mc., which falls around 410 Kc. on the scale, and listen for commercial short wave signals. None there, oh well the band is certainly dead.

The above modifications were carried out on the author's BC348R receiver and the first contact was with VK9 with a strength nine signal—a fair haul, especially as a quick change back to the original crystal controlled converter did not bring the signal up at all.

The writer will gladly supply any additional information to users of a BC348 receiver who may contemplate the conversion.

* 72 Orr Street, Shepparton, Vic.

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THE COMPLETE AMATEUR

(Continued from Page 7)

about 180 Ma. max. signal for the modulators. This means that at least a transformer having an I.C.A.S. rating of 250 Ma. be used.

Again two 6.3v. filament windings are necessary although only one is used. The h.t. secondary should have 600 volts a.c. either side of centre tap. The use of two 83 valves safeguards the output of the valves as each valve is capable of handling over 300 Ma. with ease if the plates of each valve are tied together.

By coupling two 16 uF. electrolytic condensers in series and shunting them with small resistors of a high ohmage resistance, adequate capacity at a high peak voltage rating is provided.

Provision to isolate the h.t. from each pack is included by the inclusion of switches in the centre tap return to each wire.

Both packs have a 10 Ma. bleeder incorporated in the filter circuit. This is to ensure that at no time will the packs be without some load should the h.t. be inadvertently removed from the rig.

Good insulation is an essential factor in both packs, but particularly in Pack No. 2. Wiring should be in accordance with other chassis, keeping all r.f. leads away from filament leads or a.c. leads.

Two-pin outlet plugs will assist in wiring your rig and will simplify the removal of various chassis without the necessity of undoing numerous bondings.

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HEARD THIS EXPLANATION?

A vacuum tube goes west when excess voltage is applied to the filament because under these conditions the electrons are set going at such an enormous rate of speed that a breeze is created in the tube, which blows out the light of the filament, thereby causing the tube to go "west."

The above was doped out by members of the San Isabel Radio Club, Pueblo, Colorado.—"QST."

HINTS AND KINKS

MATCHING LOW IMPEDANCE PHONES

Numbers of Amateurs purchased low impedance ear phones during those brief and all too short years of cheap disposals gear. These phones have an impedance of about 75 ohms and require under normal conditions a transformer to match them into audio plate circuits.

Many Amateurs, of course, did not bother to use any form of impedance matching and secured, it is true, reasonable results.

There is, however, a very simple method of impedance matching which requires **no additional components.**

The cathode of a valve is a point of low impedance and by simply lifting the cathode by-pass condenser of the appropriate audio valve from ground, and inserting a self closing jack in series with the condenser to ground, the phones are then in a circuit where the impedance mismatch is negligible.

It also happens conveniently that if the speaker is operating at a comfortable listening level, then it will be found on inserting the phones that they too are at a comfortable audio level. How many times have you plugged in phones to a plate circuit and had your ears ring for hours later?

There are several ways in which a speaker may be silenced in response to the XYL's demands, when phones are then the order for the day. Some Amateurs open the voice coil with a switch. This practice should not be carried out since the output valve is then working into infinite load and valve damage can occur. It is recommended that the primary of the speaker transformer be shorted with a switch. Under these conditions the valve is working into zero load, and no valve damage can be caused.

—"Break-In," Feb., 1954.

OVERTONE CRYSTALS

If you wish to know if a crystal will work on one or several overtones, you can easily check this with your grid dip oscillator.

Wind a two-turn coil of fairly heavy gauge insulated wire, diameter suitable to slip over the coils of your g.d.o., and attach this to the crystal with crocodile clips. Plug in the coil of the g.d.o. which will check the funamental frequency of the crystal. You will get a very good dip on the meter.

Now replace this coil with one that will give you the overtone required, e.g. 3 : 5 : 7, etc., and of course slip over the g.d.o. coil the two-turn coil with the crystal attached. Tune the g.d.o. slowly. If the crystal is working on that overtone, not on the 3rd, 5th or 7th harmonic, but slightly lower in frequency, this is the overtone frequency.

Usually the higher the overtone, the less pronounced is the dip and the sharper the tuning on the g.d.o.

TO PREVENT METAL FATIGUE IN BEAM ELEMENTS DUE TO WIND VIBRATION

Tie the ends of the elements to each other, using nylon fishing line. If the boom is made so that it projects beyond the furthest elements, the fishing line may then be "v'ed" in from the outer elements and the whole structure made rigid.

Pack the elements with sawdust; this tends to dampen out most of the vibrations without increasing the weight too much. The ends of the element should be plugged with wooden dowels or something similar.

Nylon or similar synthetic rope may be used to support vertical dural or aluminium poles carrying parasitic arrays. The supporting ropes of this type may pass between the elements without affecting the performance of the array as they have good insulating properties and are non-hygroscopic.

DRILLING GLASS

Another method of drilling holes in glass is by using triangular files in place of twist drills. Old files are broken up into suitable lengths. The pieces are ground at the narrowest ends and on the flat surfaces until one has a sharp three-cornered point.

Drilling is done in the normal way, but the glass should be reversed to keep the sides parallel in the finished hole. This should be done as soon as the point breaks through the bottom—this will ensure a neatly finished hole. The method was, and may be still, used in the glass trade. The lubricant, and/or cooling fluid, is water.

CLEANING AND KEEPING THE IRON CLEAN

A very useful item for this is that popular article of the kitchen, the pot scraper, which is usually made of steel wool.

Two or three are tucked into a small tin. The tin is then screwed to a piece of timber for support. The iron is inserted into the tin, a couple of twists and the iron is clean. Probably best done while the iron is hot.

CAPACITY CHECK

We all have capacitors, fixed and variable, of unknown capacity, but it is quite simple to check them with a grid dip oscillator once you have done a little calibration on the g.d.o. dial, or, if it is a dial marked in degrees, then graph out the result.

Take any solenoid type of coil from the junk box and across the coil place a capacitor of known value. Now check the frequency of this parallel tuned circuit with the g.d.o.

If the coil is too large it may be outside the range of your g.d.o. With a bit of experimenting you will find a coil that will give you readings on the g.d.o. On a piece of paper log the capacity of the known capacitor used, also the coil number and the dial reading of the g.d.o. The more known values of the capacitor used the better. You may now either mark the g.d.o. dial, if it is graduated in frequency ranges, with various capacities obtained or you can have a graph for each coil of the g.d.o.

When you have a capacitor of unknown capacity clip it across the coil and use the g.d.o. to obtain the frequency this circuit tunes to, then either read the capacity direct from the g.d.o. dial or check against the appropriate graph.

BINDING MAGAZINES

Magazines may be bound into tidy volumes by the use of Cellophane (Scotch) Tape. One copy is placed face downwards, the other face upwards. With the backs edge to edge, place two or three strips of tape across the copies. Reverse the copies and repeat the process. Each succeeding copy is bound to its preceding copy in a similar manner. In this way one has a neat volume at the end of the year. An index can be drawn up from the contents page of each copy. Cheap, but handy!

STICK SOLDER

Stick solder as used by the tinsmith is cumbersome and unwieldy when used for soldering in radio work, especially when used with the average iron used by radio enthusiasts. Handy sticks can be made by drawing a very hot iron, in contact with the stick solder, across an old file or other metal surface.

—"Radio ZS," Jan., 1954.

SUPPRESSION OF GENERATOR WHINE

Many cases of generator whine may be suppressed or eliminated merely by adding a coil and a capacitor to the generator circuit. The coil, close-wound with 20 turns of No. 12 enamel wire and having a diameter of ¾ inch, should be inserted in series with the generator output lead right at the output terminal of the generator. A 0.01 uF. condenser should then be connected between the output-lead side of the coil and the case of the generator. This method of noise suppression seems to be much more effective than does the system which employs only capacitance for filtering.

RE POWER SUPPLY FOR THE BC221 FREQUENCY METER

It should be noted by BC221 Frequency Meter users who get their necessary 105 or 150 volts from 300-volt supplies and VR tubes, that the BC221 by-pass condensers rated at 200 volts will be endangered if VR tubes or VR-tube connections were to fail.

—"QST," Oct., 1953.

WALTHAM DAN'S

NEW PLAN

SPECIAL FOR THE "HAM" MAN

THE BARTER PLAN OF WALTHAM DAN

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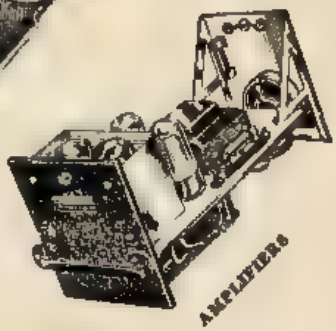

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OF

SYDNEY and **MELBOURNE**

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AN EASILY-BUILT FREQUENCY METER FOR THE AUDIO RANGE*

● If you have ever had a need for quickly measuring an audio frequency below 10,000 cycles to a reasonable degree of accuracy, here is the gadget for you. You couldn't ask for anything more simple and foolproof than this little direct-reading frequency meter.

IN recent years there has been an increasing need for accurate frequency measurement within the Amateur bands. Among the reasons for this increasing need are: (a) the rapidly growing concentration of stations within certain band segments; (b) the increased use of network operation occasioned by civil defence and other traffic, and (c) the advent of s.s.b. techniques.

The circuit presented here provides in a very simple manner a sufficiently accurate comparison of frequencies for normal network and single-sideband activities. It is the function of this circuit to provide a linear indication on a calibrated meter of the heterodyne beat frequency existing at the output of any normal communications receiver. Thus, by use of this simple instrument, the procedure of manually adjusting a standard frequency meter to zero beat is replaced by a direct reading on a meter dial of frequency error compared with a preselected frequency setting. Two ranges are provided: 0 to 10 Kc. and 0 to 1 Kc. Thus, the frequency displacement can readily be read to within 100 cycles if the heterodyne is above 1,000 cycles and to within 10 cycles if below 1,000 cycles.

As shown in Fig. 1, the circuit includes a single 6AU6 tube connected as a square-wave limiter. The heater and plate voltages may be derived from the receiver. The square-wave audio output from this tube drives a double-diode counter circuit using two 1N38A germanium diodes that provide sufficient current to operate the 0-1 milliammeter.

Calibration adjustment for the full scale readings of 10,000 cycles and 1,000 cycles are by means of variable shunts R4 and R5, which may then be replaced by fixed resistors. The adjustment holds for long periods of time and the meter calibration below the full-scale values is quite linear. Either the 500-ohm or the 8-ohm output transformer tap on a communications receiver is satisfactory for the input signal to the circuit. The entire circuit can be housed in a small inclined-front meter cabinet.

* Reprinted from "QST," October, 1953.

For those unfamiliar with a "counter" circuit, a little study of Fig. 1 may be in order. A sine-wave signal of any frequency (and of any amplitude above the limiting threshold) appears in the output of the 6AU6 as a constant-amplitude square wave. This square-wave voltage is applied to C2 (or C3, depending upon the range in use). Charging current to the condenser is carried in one direction by the lower diode—in the other direction the charging current passes through the meter and upper diode. The indicated current is proportional to the frequency (number of cycles per second—hence the name "counter"), to the accuracy with which the capacity of the condenser, and the amplitude of the square wave, remain constant. It is only necessary to calibrate the meter at 1 Kc. and at 10 Kc. to have accurate readings throughout the scale without further calibration.

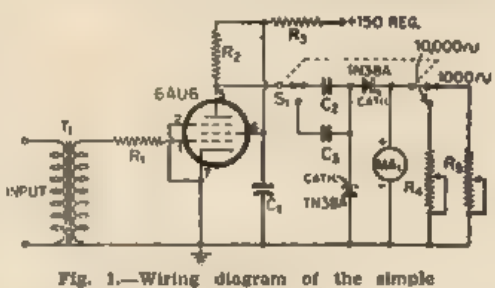


Fig. 1.—Wiring diagram of the simple beat-frequency meter.

C1—8 uF, 250 volt electrolytic.
C2—0.01 uF mica.
C3—0.0011 uF mica.
R1—0.51 megohm.
R2—10,000 ohms.
R3—1,000 ohms.
R4—10,000 ohm potentiometer.
R5—1,000 ohm potentiometer.
MA1—0-1 Ma. meter
S1—D.P.D.T. switch.
T1—Microphone, pick-up or line to one grid transformer.
Crystals—1N38A or GEX44.

When the meter is used to measure the frequency error of a network station, the receiver is first tuned to zero beat with the frequency standard (or a station known to be on the correct frequency). The off-frequency station will give an audible beat that can be measured by the meter (in the absence of other signals). Whether the off-frequency station is higher or lower must be determined, of course, by retuning the receiver to zero beat with the signal being measured. If the frequency standard is one with signals at 10 Kc. intervals, the usual care must be exercised to make certain which of the standard signals is beating against the signal being measured. The receiver selectivity is usually used to reject the undesired standard signals.

AMATEUR CALL SIGNS

FOR MONTH OF FEBRUARY, 1954

The following amendments for February have been made in the current issue of the Call Book.

ADDITIONS

VK— **New South Wales**

2APC—E. W. Nowill, 100 Crinan St., Hurlstone Park.
2AQV—G. B. Moore, 33 Richmond St., Ryde.

Victoria

3LR—F. W. Cropley, 7 Dean Ave., Hawthorn, E.2.
3AWV—G. C. R. Waters, 408 Bridge Rd., Richmond.

Queensland

4JS—H. W. Glocker, C/o/ Cairns Regional Electricity Board, Tully Falls.
4PS—A. P. Stephenson, Station' 9 Little Street, Belgian Gardens, Townsville, Postal: 117 Flinders Street, Townsville.
4SC—C. H. A. Armstrong, 2 Harlin Rd., Ipswich.

Territories

9EB—K. S. Mullan, Station. C/o. A.W.A. Aviation Service Depot, Lae, T.N.G., Postal, P.O. Box 13, Lae, T.N.G.

ALTERATIONS

VK— **New South Wales**

2CD—Flat 2, "Brooklyn," 88 Milson Road, Cremorne.
2KW—397 Western Road, Wentworthville.
2OR—Boronia Avenue, Cheltenham.
2RN—Station Street, Whitebridge, Newcastle.
2VP—323 Kissing Point Rd., Dundas, Sydney.
2ZT—1 Stuart Road, Cardiff
2ABH—52 Horton Street, Yagoona.
2ACI—1560 Pacific Highway, Wahroonga.
2AGZ—Broken Hill Technical College, Broken Hill.
2ALI—3 Nyora Street, Cooma North.
2ALN—48 Darling Avenue, Cowra.
2AQG—15 Robinson Street, Kogarah.
2ASQ—13 Diane Street, South Tamworth.

Victoria

3FY—High Street, Kangaroo Flat, Bendigo.
3TF—73 Nicholson Street, Footscray, W.11.
3UF—"Coonamby," 127 Riversdale Road, East Camberwell
3APT—Flinders Road, Tyabb.

South Australia

5FQ—12 Queens Avenue, Burnside.
5VK—7 Parkhouse Ave., Glenelgles, Adelaide.
5XO—C/o. Loxton Co-operative Winery, Loxton.

Tasmania

7BR—47 Preston Street, Queenstown.
7CF—51 Cutten Street, Queenstown.

Territories

9RM—Wau, T.N.G.

DELETIONS

New South Wales: VKs 2EB (now operating under VK9EB), 2UO, 2VB, 2VJ, 2AEB, 2AIC (now operating under VK4JS), 2ADC, 2AVA.

Victoria: VKs 3IA, 3QB, 3AES, 3APQ (now operating under VK2APC).

South Australia: VKs 5OB, 5WV (now operating under VK3AWV).

Tasmania: VK7SA (now operating under VK4SC).

Territories: VKs 1JC, 1RF.

50 Mc. W.A.S.

Call	Certificate Number	Additional Countries
VK2WJ	13	4
VK2VW	9	3
VK4RY	2	2
VK4HR	4	2
VK5LC	1	1
VK6DW	3	1
VK3PG	5	1
VK3RR	6	1
VK3HT	7	1
VK1AEZ	10	1
VK3XA	11	1
VK3GM	12	1
VK3ACL	14	1
VK3ZD	16	1
VK2HO	17	1
VK3ABC	8	
VK3WH	15	

DX ACTIVITY BY VK3AHH†

DX HIGHLIGHTS

FO8AJ/MM, Clipperton Island, operates on 7 and 14 Mc., both c.w. and phone (from 4TN).

VK1DY, Heard Island, keeps schedules with FB8 neighbours at 1400z (from 3CX).

AC4NC, Tibet, uses the following frequencies: On c.w.—14011, 14014, and on phone—14120, 14160 (from 9YY).

There is c.w. activity from Saudi-Arabia in **HZ1HZ** (from 3KR, 3ADM).

VP8AZ is supposed to be active on 14005 Kc. (from 3CX).

BAND CONDITIONS

3.5 Mc.: The first half of the month produced reasonably strong signals from Europe via the short path around 2030-2100z. North-America was well represented between 0800 and 1400z, particularly during the A.R.R.L. contest weekends.

Charlie 1AC reports Ws* on c.w. and phone; and Peter 2PA worked W6*, W7*, followed by Dick 3DG who also worked W6* with his low-powered rig. Col 3WQ spoke to VK3OK* and Ray 3ATN phoned with Ws*. Len 9OK reports many QSOs with VK* stations, while Alan 9YY managed QSOs with W6*. 3AHH worked a long series of Ws* in many districts and heard F7SHP, YU2BJK, JAs.

7 Mc.: General conditions on this band remained quite good during March. Europe and North Africa were workable over the long and the short paths, times being 0600-0900z and 1800-2100z. The Middle East and South East Asia broke through around 1700-2000z. The period for South American conditions was 0730-1100z with Central America 0900-1300z.

Our W friends were well represented between 0600 and 1500z and sometimes around 2000-2130z via the long path.

As usual, common c.w. contacts with North America are considered commonplace.

1AC is the first on the list with KL7AWB*, G3BKF*, G2HXX*. 2PA reports JZ0KF*, VR2AS*, KH6s* and long path Ws*. Laurie 2AMB mentions JAs*, CT1DJ*, SM5AQV*, KL7PAI*, FK8AO* and VU2CS, SP2GS. Neville 2AFL is the next in line with KL7AKC/KG6, XE2LA. Ivor 3XB worked CN8EL*, while Fred 3YS mentions ZM6AR*, G3BCC*, and G3HVD, KC6AA. Lance 3ZA presents an excellent list with G3FUR*, F9HR*, VS9AS*, KR6AB*, VE1ZZ*, DU1NL*, FK8AE*, FA8SB* KA2AS*, JAs* and KV4BB, 5A2FA, MP4BBD, ZB2AB, EA4CH, VP6EB, FA9VN, JA0AK, FA8DA, SM5CO, Gs. John 3AGD enjoyed a long series of W* contacts on phone during the contest; followed by Kevin 3AKE, who reports a long list of W* phone contacts and JAs*, CO7GH and KC6UZ. Eric 3ANQ spoke to Ws*, KC6AA*, while Ray 3ATN added VE*, XE*, HP*, CO*. Aussie 4TN worked on phone FO8AJ/MM*, LU6KE*, Ws* and heard CT1FL, CM2BU. 9YY QSOed OZ8DX*, DJ1JE*, DJ1JO*, plus JAs* and heard AC4NC. Eric BERS195 heard FA9VN, JA0BD, KB6, KZ5CR. TI2PZ, VS9AS, YI2AM. Don Grantley, of St. Albans, Vic. added 11JOE, YU2ACD. UAs HB9KO 3AHH's log shows VEs*, KL7FAI*, CT1DJ*, G3BAK*, G6QX*, G3FZC*.

14 Mc. Conditions on this band showed some improvement, particularly during the second half of the month. W conditions existed over both the long and the short paths around 1100-1500z, 2000-2200z and 0200-0700z (short path). Towards the end of March long path breakthroughs to Europe and Africa were observed between 0400 and 0800z, besides short path openings 1100-1400z. Times for Central and South America over the short route were between 0400 and 0700z. South East Asia came through around 0800-1300z.

Considering W and Pacific Islands contacts as normal, activity on c.w. is displayed by: 1AC with VR4AE*, 4S7XG*, KR6OC*, VS1*, VS6*, PY6PI*, CE3AG*, CE3DZ*, LU3DEV*, LU4HU*, LU4UU* YV5*, JZ0KF* HR1AA*, Europeans*, and 2PA added YI2AM* VS6*, JZ0KF*, Europeans*, and CN8MI. Noel 2AHH QSOed OQ5PU*, AP2C*, 9S4AX* LA3CD*, EI2Q*, EI5C*, FI8AE* and common Europeans* Bud 2AQJ follows with VS6*, PI1KM*, Alan 3CX continues the series of good ones with OD5AV*, VR3A*, ZS5MP*, VK1PG* VK1DY*, ZK1*, VE*, PJ2AC*, VS9*, PJ2AA*, ZB1BU*, VU2* and common Europeans*. Ken 3KR mentions HZ1HZ*, HR1AT*, FK8AB*, HS1VR*, KZ5CP*, PJ2AA*, ZK1BI*, plus Europeans* Lee 3XO reports VS1*, CR7*, PJ*, DU*, HR*, VS6*, and Europeans*. Lance 3ZA heard ZS5MP ZK1AB VR3A. Mac 3ADM keyed with HZ1HZ*, PJ2AA*, EA9DF*, plus Europeans* who were also worked by Ray 3ATN. And from South Australia we have John 5HI with PJ2AA* and long-path Ws*; and Ray 5RK with JAs* 9YY has an impressive log with ET2NG*, GI4RY*, CO7AH*, UA3KA* ZS5MP* OD5AB*, ZS1JA* ZK2BI*, 4X4FW*, VQ4EG* and common Europeans*. The following call signs found their way into our c.w. lis' rs—BERS195, AP2C, DU1CV, HR1AT, JZ0KF, VR4AB, XZ2OM, YI2AM, ZS5B, 4S7LB 5A2FA. Don Grantley: FA8AE, AP2CR, VE, JAs. 3AHH worked KR6AA*, HH2FL*, JZ0KF*, VE8CJ*, KZ5GH*, PJ2AQ* and Europeans*

On phone 1AC spoke to KR6MW*, KR6AZ*, JAs*, followed by 2PA with DU1CV*, VR3C*, VR4AE*, and 2AHH with CN8MM*, VU2CW*, VK1DY*, ZC5VR*, AB1US*, Europeans* 2AFL reports ZS5DE* and 2AQJ phoned with KR6OH* and VS1*. 3KR spoke to KG4AT*, and 3AGD to HR1AA*, followed by John 3AKO with FK8AO*. 3ATN sends another good log including OA*, ZS*, FI*, YA1AA*, AB1US*, HR*, EA9DE*, VP2KB* (Leeward Island), KP4*, YV5*, ZE*, plus Europeans* 4TN mentions Europeans while John 5HI spoke to FI8AR*, TI3LA*, TI2EL*, YV5AB*, KG4AT*, OA4AI*, and 6KJ added Europeans* and heard XZ2OM. VU Doug 7DZ contacted VS6* VR3C* AB1US*, TI2EL* Europeans*, and Pat 7FM phoned with VK1PG* VR3C*, VR3A*, AP5T*, XZ2OM*, PY2ANS*, TI3LA*, CN8FB*, HP3FL*, AB1US*, ZC5VR*, YV5AB*, XW8AA* BERS195 heard KJ6FAA, XZ2KN ZC5VR, and Norman Clarke heard KL7ALN, ZM6AQ, KR6, KAs.

21 Mc. This band also showed a marked improvement in March. There were few European openings during the first half of the month, but conditions to North America Central and South America were more consistent between 2230 and 0300z.

2ALJ's report mentions that 2ID worked Europeans* and Ws* who were also QSOed by 2AFE. Quentin 3IM contacted KR6LJ*, JA1CO*, KR6OH*, YU3BC*, SM5CO*, ZM6AP*, JA3BE*, Ws*, while Percy 3PA added ZM6AP*, VS1ES*, VS1FK* KH6s*, DU7SV*, Ws* 4S7XG* and Europeans. Frank 3ZJ heard KH6s as did Kevin 3AKE and Len 3ALD 3ATN QSOed KR6*, TI2RC*, KH6*, Ws*, while 4TN contacted KP4TA*, KR6OH*, Ws*, VE7*. S.w.l's. Norman Clarke, of Ivanhoe, N.S.W., and Jim Hunt, of Frankston, Vic., heard a long series of Ws.

27 and 28 Mc. These bands revealed relatively good conditions to North and Central America and even a European contact was reported. The openings occurred towards the end of the month, the first having been observed in Bundaberg on the 22nd March. During the last few days of the month the band displayed an excellent opening

Norm 2ALJ worked W8s* and KH6*, and Les 4XJ QSOed 25 Ws* (in W4, W5, W6, W7 and W0). TI3LA*, KH6s* Les says that 4HE worked EA2CQ* on 30th March on phone. Jim Hunt heard a long series of Ws (in W4, W5, W6, W7 and W0)

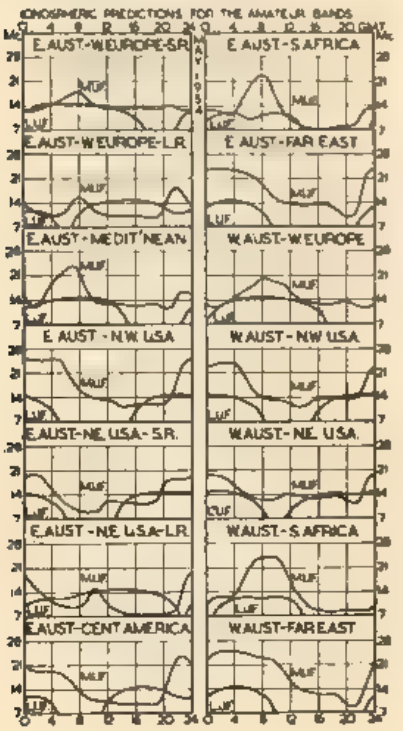
GENERAL NEWS

This year's A.R.R.L. DX Contest concluded with its final c.w. and phone sessions in March. AB1US is a M.A.R.S. station on Formosa from 7DZ. I5LV runs 25w. to a multiband antenna and operates c.w. and phone on all bands from 9YY. The following stations are active in Saudi-Arabia HZ1HZ, 1TA, 1SS, 1AM, 1NA, 1SA (from 3YS). Stations at present active on Samoa are ZM6AA, 6AP, 6AQ and 6AR (from 2ALD). Sarawak is represented by VS4BA on 14080 Kc. FB8XX is available after 1530z on 14030 Kc. (from 9YY)

VK9OK and VK9RH keep Norfolk Island on the Ham Radio map. VK0GM has now left

† 10 Belgravia Ave., Box Hill North, E.13, Vic.
* Call signs and prefixes worked.
z — zero hour—G.M.T.

PREDICTION CHART, MAY, 1954



the island (from 9OK) QSL cards from JZ0KF are now on their way to VKs (from 9YY) Overheard on 7 Mc. was a comment that a ZM6 Ham may soon be on the air from ZM7-land (from 3YS). TI9AA was DI9AA operating from Cocos Island. DI8AA is the call sign of the "Xarifa," carrying a German underwater photography expedition in Central American waters.

A rather loud station with a T4 to T7 signal on 14 Mc. uses the doubtful call sign XINP and claims to be on a yacht off Australia—well!

QTHs Of Interest

AB1US—A.P.O. 83, C/o. Postmaster San Francisco, California, U.S.A.

HR1AA—S/Sgt. Jack Overton, U.S.A.F. Mission, C/o. U.S. Embassy, Tegucigalpa, Honduras.

9S4BS—Gerd Bauernfeld, An der Trift 34, Saarbruecken 3, Saarland.

VS4BA—Richard A. Haskins, Kiching Airport, Sarawak, via Singapore, Malaya.

ET2NG—Lee Grant, P.O. Box 252, Asmara, Eritrea.

MB9CA—Franz Kardash, Unterbergen, Kaernten, Austria.

MP4BEN—Dukhar Airport, Qatar, Persian Gulf.

VU5AB—R.A.F. Detachment, Nicobar Islands, C/o. R.A.F. Changi, Singapore 17, Malaya.

T12BX (ex-CP1BX)—Ted Westlake, C/o. U.S. Embassy, San Jose, Costa Rica.

QSLs from rare countries landed at 2AHH: YK1AH, TA3AA, SV0WE, YV5AI, FQ8AP, ZS1FX, ZS5KA, OZ7EJ/MM, 2AMB: VK9WZ, GI5HZ, CO7AH, MP4BBD, YO4CR. 3ALD: OZ7EJ/MM. 3ATN: OQ0DZ, AC4NC. 5HI: TF3SV, HC1LO, FI8AB, MP4BBD, ZP5CF, VS1AA. 7DZ: KT1WX 9YY OD5AB, VS1ES, I5LV, XW8AA, VQ2GW, FI8AE, FI8AZ. BERS 195: MP4BBD 3AHH FB8ZZ, YI2AM, XE2LA, VR4AE, VP5SC, KA0IJ, SM5AQV (3.5 Mc.).

This time the monthly thanks go to VKs 1AC, 2ID, 2PA, 2AFE, 2AHH, 2ALJ, 2AMB, 2APL, 2AQJ, 3CX, 3DG, 3IM, 3KR, 3PA, 3WQ, 3XB, 3XO, 3YS, 3ZA, 3ZJ, 3ADM, 3AGD, 3AKO, 3AKR, 3ALD, 3ANQ, 3ATN, 4XJ, 4TN, 5HI, 5RK, 6KJ, 7DZ, 7PM, 9OK, 9YY, and s.w.l's. BERS195 (VK3), Norman Clarke (VK3), Don Grantley (VK3), and Jim Hunt (VK3).

Good Hunting!

ROSS A. HULL MEMORIAL V.H.F. CONTEST 1953-54 RESULTS

Congratulations to Rollo VK6BO for winning the Ross A. Hull Memorial V.h.f. Contest for 1953-54. Rollo's score of 3,348 points reflects the hard work he put into this Contest.

A 50 Megacycle DX Contest is not like any other Contest. It extends over a period of two weeks and band openings are not easily predictable. They are haphazard and sometimes only last for a few minutes. This means that a contestant has to spend many hours listening, but when the band does open, he is really busy as he has to cram as many contacts as possible into a period which may be ten minutes or ten hours, and during these periods QRM is as bad as 40 or 20 metres.

Conditions on the 50 Mc. band appear to vary from year to year, and we have not yet had enough experience to be able to predict them with any degree of accuracy.

This year the skip appears to have been longer than usual and this is reflected in the scores of VK4, VK5 and VK6 entrants. Openings in VK2 were well below average, particularly to VK3 and New Zealand.

Two VR2 stations were active and were worked by quite a number of Australian stations.

Entries for this year's Contest were rather disappointing. Only 42 logs were received, and many of the regular customers are missing, although most of them were active at one time or another during the Contest.

SCORES

Ross Hull Trophy—VK6BO, 3,348 pts.

New South Wales

	Points
VK2ADT	1422
VK2XO	1229
VK2WH	1220
VK2HE	500
VK2VW	416
VK2JX	267
VK2AAJ	199
VK2AMV	89
VK2ADS	10

Victoria

	Points
VK3RR	748
VK3KK	732
VK3CP	544
VK3XM	506
VK3ZL	315
VK3BQ	305
VK3AHL	105

Queensland

	Points
VK4BT	2534
VK4NG	1746
VK4TY	1529
VK4PQ	1308
VK4MT	67

South Australia

	Points
VK5MT	1553
VK5AX	122
VK5NL	110
VK5JO	80

West. Australia

	Points
VK6BO	3348
VK6HK	3019
VK6WG	1836
VK6GB	1138

Tasmania

	Points
VK7LZ	744
VK7AB	21

New Guinea

	Points
VK9KB	685

New Zealand

	Points
ZL2AGD	475
ZL2KT	290
ZL2DS	271
ZL2BJ	105
ZL3NE	833
ZL3GS	608
ZL4DU	326

Check Logs were received from VK2ABC, VK3GE, and ZL3FX.

—Federal Contest Committee.

FIFTY MEGACYCLES AND ABOVE

NEW SOUTH WALES

During March there was quite a lot of activity on 144 Mc., both in the field and various shacks. The debate "F.M. v. A.M." was fated not to take place for after two postponements, it was to have been the feature of the March meeting of the V.h.f. Group, but at the last minute two members of the a.m. team had business duties to attend and could not take part, however a very interesting discussion on the merits of n.b.f.m. for v.h.f. bands was given by Bob 2OA and John 2ANF. John described the diode modulator he uses and made several very good points in explaining the operation and advantages of that system, so much so that Vaughan 2VW, the only member of the a.m. team present, admitted that the f.m. system as described by John had very definite advantages. The summing up of the discussion was made by Fred 2PF in an able and judicious manner and all agreed that although the debate would have been the better way of dealing with the subject, the discussion cleared a lot of queries regarding f.m. which has a lot to command it.

The March outing was in the form of a fox hunt. John 2ANF and Ess Griffiths, with Roy 2HO and Perc 2APQ as ballast, were the fox. The final location was between Werrombi and Silverdale, and after covering the car and placing the antenna out of sight, proceeded to boil the billy and await the arrival of the hounds, comprising Bob 2OA, Cliff 2LG and party, Jack 2AGT with Leo 2KS, Ted 2ABO and party complete with 3 over 3 rotary bear on top of the car, and Eric 2AFM. The first to arrive on the scene was Bob 2OA who in a cloud of dust flashed past, but did not see the location. Twelve minutes later, Cliff 2LG, followed by Bob 2OA, who met Cliff coming along the road in the opposite direction, found the location. They were followed by 2AGT, 2KS, 2ABO and 2AFM. After the usual ragchew and lunch, the fox went to earth in a very poor location at Weatherill Park, but was not found within the time limit. It was voted an excellent day with perfect weather.

There have been several individual mobile efforts. Ted 2ABO, after his successful trip through the Blue Mountains where he maintained continuous contact with Sydney stations, decided to go south and after contacting Adrian 2HE from Bowral and Moss Vale, proceeded through Kangaroo Valley to Cambewarra Mt. where a tree wrecked the 3 over 3 antenna on the car. Cliff 2LG made the round trip through Katoomba, Mt. Victoria, Mt. Tomah on Sunday, 28th March, and had 28 contacts on the trip. A really good signal from 6w. to a 4J6.

Contacts with the west were made by John 2ANF with Hugo 2WH, Norm 2JW and Don 2ALX, who was using a 522. Bill 2ABZ mastered the controls of his new rx and he also heard 2WH but although Hugo reported hearing Bill, they did not make contact.

Of the stations north of Sydney, Major 2RU at Gosford is the only one being contacted. What has happened to the Newcastle gang? Several of the Sydney chaps look for signals from the north every night from 7.30 to 8.30 p.m., but it was not until the 21st that Dave 2BZ was heard with a good signal. 2ATO, 2HO, and 2ANF contacted him. 2LG, 2KS, 2HE and 2APQ also were copying and called, but Dave must have pulled the big switch.

The results of the Field Day, held on 31st January, were Section 1 (greatest number of contacts by a portable station over 50 miles from Sydney)—1st, 2AJZ, 10, 2nd. 2HL, 10, 3rd, 2ATO, 7 Section 2 (longest distance worked by any portable station -1st, 2ANF-2GU, 154 miles, 2nd, 2JW 2WJ, 136 miles, 3rd, 2AJZ-2JW, 73 miles. Section 3 (greatest number of contacts by any portable station)—1st, 2ANF, 33; 2nd, 2AJZ, 19; 3rd, 2HL, 10. A total of 34 stations took part, but only seven logs—the minimum required to enable the contest to be judged—were received.

A feature of the day was John 2ATO using a walkie-talkie running 0.8w. worked 2WJ over a distance of 69¾ miles. Max 2ARZ hopes to be putting a signal on 144 Mc. soon using an 832A in the final and a cascode rx.

On the April agenda is a lecture by Mr Bert Sinfield on the Voltohmyst, and a direction finding field day. The lecture for May will be on Noise Generators by John 2ANF

Finally, a word of appreciation to Roy 2HO for the work he has done in acting as scribe for the V.h.f. Group. At the March meeting the task was passed to yours truly, 2APQ. Roy has other demands on his time. Thanks Roy for your efforts and we will endeavour to keep the v.h.f. gang informed of the activities on the bands and in this regard I would appreciate any information on proposed mobile excursions, DX skeds, 50 Mc. activity and other items of interest for insertion in the notes.—2APQ.

VICTORIA

The usual monthly meeting of the group took the form of a lecturette by 2JO and 3OJ on the virtues of their 4 over 4 over 4 beam for portable work. Then Jack 3AIK demonstrated his beam which was certainly an ingenious device, offering even the facility of horizontal or vertical polarisation. The meeting concluded with a review of the March Field Day when 3ADU went to Mt. Koriot, 3YS Kinglake, 3LN to Mt. Dandenong where he completely disturbed the natives by arriving on top of the mount with a 10 ft. boat on the roof of the car Noah wasn't in it, but rough weather had caused a change of location from seaside to the hills. Next to come under review was the Fox Hunt which proved very successful for the mobiles at the first run, 3ADU and 3YS deadbeated in the event. In the second run, the fox, 3LN, managed to evade the hounds for the whole time, but on the third run, 3YS was successful, 3ADU second with 3ALY in the immediate vicinity, but had not caught the fox before time was called. Three more mobiles are under construction for hound cars on the next run.

The highlight of 28 Mc. this month is the breaking of the State record during the Field Day when 3AFJ and 3AAF put the record up to 83 miles. 3AFJ was using a 3 element beam at Arthur's Seat and 3AAF used a 6 element Yagi at Mt. St. Leonard's, near Healesville. Congratulations Ken and Bert.

3YS, 3BQ and 3LN have kept a close watch on the south this month with the hope of a break through to VK7, but as yet no contacts have been reported. 3CP is very pleased with 50 Mc results with his 144 Mc beam—a city slicker 4 stacks 8 driven half-waves and it gives 2 to 3 S points back to front, and Athol has worked all VK and ZL this summer

The rarest DX on 144 Mc. was the appearance of the Technical Editor on the band for ten minutes, and 3CP worked 3VZ in the exclusive. Let's know when the next 10 minute burst is to take place Jack and we'll have a 20 mx dog-pile to make contact.—3LN.

SOUTH AUSTRALIA

"QST" is running a series of articles on v.h.f. equipment for the novice and they are particularly well illustrated with photographs of the finished articles. The 12AT7 tube is well to the fore and the latest February issue carries a description of a 220 Mc. tx using two of them to reach 220 Mc from a harmonic osc. using an 8.15 Mc. xtal. The p.a. uses another 12AT7 in a p.p. neutralised circuit. A 5 x 9¼ inch chassis, 3 inch deep, contains the works! It is an article for the beginner and in service language, all the "g-g" is there.

Talking about beams, and which v.h.f. enthusiast isn't, can anyone in VK land better a 100 ft. tower with a 40-element 144 Mc. array perched on top? Have a look at the "50 Meg. and Above" pages Tom; it should be the answer to your problems up there—but it always pays to send the XYL up the tower first!! When tuning an array or even a simple mobile antenna, don't forget to use the grid dip osc. Particularly with the smaller power input to the final in many mobile rigs, it is difficult to get a significent rise in the plate current, to indicate that the antenna is loading correctly. With mod. osc. the loaded conditions can actually occur along with a drop in plate current due to reduced feedback to the grid circuit.

Wally 5DF at Pt. Lincoln sends information on the efforts of the local boys to get on 2 mx. A visit from Les 5AX, complete with a 2 mx rx, failed to make the dead line of 1000 hours on Sunday morning when an attempt to hear the relay of 5WI was to have taken place. However, the visit and the sight of the gear has left more inspiration in the hearts of Wally and Jack 5VJ. Another attempt using their own gear is to be made soon. Anyone in the foothills should have no difficulty in getting a signal across the drink. Another visitor this month was Lance 5XL, accompanied by XYL and harmonics, whose "stay was short and sweet," and as far as is known didn't get away with anything. Somehow or other, I think that "the little fishing village" must have something besides fish Wally! I'll have to come and see for myself Perhaps I can home on your d.f.! (very funny; 5PS please note that the disease is catching.)

Hughie 5BC now has the 2 mx beam aloft and is getting good results from Adelaide, working 6 and 2 mx cross-band. Maybe by the time this gets to print, the tx will be full of ergs too. Don't let him put it over you Tom, one of the wheels from "rattling salvation" would make an excellent "halo" antenna!

This month we lost a regular v.h.f. Ham from our ranks with the death of Ross Harris, 5FL. Ross was one of the pioneers with a c.c. tx on 2 mx, using a converted 1143A tx together with a 2-tube variable osc. converter feeding into the 10.9 Mc. channel of the 1143A rx. I always found Ross a willing helper and a very good friend to those who came to know him well. Our sincere sympathies go out to his wife and family.

I presume that the S.E. Hams have been doing some local work on 2 mx, by the superior tone of last month's VK5 Div. Notes, but from reports here and elsewhere, that excellent 50 cycle signal of Tom's (5TW) is getting out further than his 144 Mc. one! What's your verdict Claude? Sometimes hear 5MS on 40 mx working the city.

Pirie and Whyalla Hams have excellent opportunities for contacts in all directions, including an excellent water path down the Gulf to Lincoln. The rise between Pirie and the Murray Valley may prove to be an obstacle, but I should say that it is worth a go.

For DX'ers, VK1HM (ex VK6MH), located on Cocos Island, will be listening regularly each evening on the 50 Mc. for contacts. He will be there for several months, so pour the coals on ye faithful ones. Hurry up and get going Charlie 5ON, you may make that 815 earn its keep yet. Don't let "Doc" or Joe beat you to it—lay off Ron 5MK.—5XU.

FEDERAL, QSL, and DIVISIONAL NOTES

FEDERAL

APPOINTMENT OF FEDERAL EXECUTIVE FOR 1954-55

The Victorian Division, as the Headquarters Division responsible under the Federal Constitution to appoint the President, Vice-President and Secretary to the Federal Executive, has advised the appointment as follows for the year 1954-55:—

PRESIDENT: William E. Gronow, VK3WG, 2 Anthony Street, Glen Iris, S.E.6.

VICE-PRESIDENT Harry Kinnear, VK3KN, St. Leonard's Court, South Yarra.

SECRETARY: G. Maxwell Hull, VK3ZS, 22 Dryden Street, Canterbury, E.7.

[Max 3ZS, who has carried out the duties of Federal Secretary for almost four years now, has tendered his resignation from the office of Federal Secretary as from June this year although he is prepared to carry on long enough to assist the new Secretary to settle down to the duties required of this office. The Headquarters Division is at present looking for a suitable man for the job and will advise all Divisions when the new appointment takes place.—Ed.]

The Federal Executive, responsible to appoint all further officers to the Executive, has appointed the following:—

TREASURER: G. A. C. ("Rick") Ewin, VK3AGC, 55 Dendy Street, Brighton, S.5.

ASSIST SECRETARY: John Rice-Oxley, VK3AKO, 38 Victoria Ave., Canterbury, E.7.

PUBLICITY OFFICER: George Glover, VK3AG, 54 Watt Street, Box Hill, E.11.

George, in retiring from the Presidency of the Executive, does so with two years of hard work behind him and a job well done for the Federal side of Institute affairs. During those two years George never missed presiding at one meeting of the Executive and showed a keen interest in the business side of affairs in between meetings.

Bill Gronow, in taking the chair, does so with past experience of the office to assist him right from the start, and his ability to deliberate on the problems before the Executive from time to time fits him admirably for the office of President of the Institute. With the same team gathered together again, with the prospect of two new offices being created very soon to cope with the increased duties, the Institute can look forward to another year's hard work from its Federal Executive to ever improve the value of the Wireless Institute of Australia to the Australian Amateur and to continue to maintain and better the privileges available to him.

"DUPLEX" WORKING

There still appears to be some doubt about this business of "DUPLEX" and "BREAK-IN" operation of Amateur transmitting stations, judging by a recent report that an increasing number of stations are working a form of "Duplex" on the Amateur bands assigned below 50 Mc. You are reminded that "Duplex" operation is not permitted except on 50 Mc. and higher bands, on these bands it is not referred to in the Regulations as such, but as a form of "Break-In" operation where the carrier is permitted to run unmodulated. **BUT ON THE BANDS BELOW 50 Mc. YOU MUST CUT YOUR CARRIER COMPLETELY OFF DURING PERIODS OF LISTENING.** The relevant Regulation reads thus:

Paragraph 111 of the Handbook for Operators of Amateur Wireless Stations' "**Subject to the requirements concerning station identification as set out in Part VI. of this Handbook, break-in systems of operation (definitions of which appear in Part 1 of this Handbook) may be used by Amateur Station Licensees. The stipulation regarding modulation made in Paragraph 110, above, must be rigidly observed; that is proper provision must be made to cut the carrier during each period of listening.**"

Paragraph 110 of the Handbook for Operators of Amateur Wireless Stations "**Except for brief tests or adjustments or in the authorised Amateur frequency bands from 50 Mc. upwards, an Amateur Station Licensee must not cause a carrier wave to be emitted from his transmitting equipment unless such wave is subjected to intelligible modulation. Prolonged tests or adjustments in the authorised Amateur frequency bands below 50 Mc. must be made on an artificial aerial.**"

We have suggested before in these columns that an occasional revision of the Regulations governing the operation of your station is a good idea because the best of us forget sometimes. With the winter months approaching, it is a good time to spend one evening reading through the Regulations.

FOUR NEW CERTIFICATES AVAILABLE

Whilst it is proposed to publish a complete and up-to-date list of all world awards, this may not take place for a little while yet. But to keep readers up with current events, the four following new awards may prove of interest to those of us who are really keen certificate hunters.

The Hilo Amateur Radio Club of Hawaii announces the availability of its Hilo Radio Club Certificate. Any Amateur submitting proof of contact with 15 club members is eligible for the award. All contacts must be made after September 1, 1953, with 15 of the following H.A.R.C. members: KH6s AE, AFQ, AFR, AFS, AKX, AQE, AQP, AQU, ARN, ATQ, ATT, AU, AUB, AUC, GP, GW, IN, UO, and WH6s ATY, AUA, AZL, BAD, BAI, BAQ, BAR, BAW. Confirmation should be sent to the Hilo Amateur Radio Club, P.O. Box 1639, Hilo, Hawaii. The club also has an "Aloha" Committee that takes care of all visiting Hams!

Any Amateur who contacts ten Key West Hams is eligible for the **Conch Net Certificate.** Applications should be sent to Key West Amateur Radio Club, Box 210, Key West, Fla., U.S.A. K W A.R.C formerly issued coconuts for such work, but discontinued this practice when the cost of postage became prohibitive.

The Greater New Orleans Amateur Radio Club takes pleasure in announcing the availability of an operating achievement award upon receipt of satisfactory evidence of two-way communication with 25 Amateurs in the Greater New Orleans area. Correspondence for the WA-"25" Award should be addressed to the Greater New Orleans Amateur Radio Club, P.O. Box 1057, New Orleans 4, Louisiana, U.S.A.

The York Amateur Radio Club is sponsoring the **White Rose Award,** available to any Amateur who furnishes proof of contact with ten stations in the Greater York (Penna.) area. Cards or confirmations should be sent to Royal M. Gibson W3LUD, 219 Wynwood Road, York, Penna., U.S.A.

SILENT KEY

It is with deep regret that we record the passing of:—

VK3ED—D. O. Jones, 7/4/54.

VK5FL—R. C. Harris, 31/3/54.

Ex-VK6BN—Bert Stevens, 29/3/54.

FEDERAL QSL BUREAU

RAY JONES, VK3RJ, MANAGER

Victorian Hams were pleased to see Geoff Warner, VK9GW, during the latter end of March. Most of us were envious of Geoff's good fortune in having a trip to Europe. It is probable that on his return he will be heard under a VK3 call sign. We wish him pleasant travelling and safe home.

The QSL Bureau for Austria is: O.V.S.V., Kierlingerstrabe 10, Klosterneuburg, Austria.

PJ2AA, ex-PJ5RE, who spent some time in VK during the war period, sends his best wishes to Australian Hams. He was one of the PA boys up in PK land as a commercial operator at the outset of the war. Later he was at Parafield and other parts of VK. Nowadays he operates aeradio for the Shell Company in PJ.

Details of the Swiss H22 Contest, which was staged from March 20 to 21, did not arrive in time for prior publication. Any Hams who worked HB stations during the Contest should send logs to H22 Contest Committee, Box 1203, St. Gallen, Switzerland.

Details of the Brazilian Society L.A.B.R.E. Annual Contest and lists of countries necessary for the W.A.A. Award may be obtained on application to this Bureau.

In a despatch to this Bureau from Mawson, Antarctica, dated 19th February, Bill Storer, VK1EG, states that the set-up there is not too bad, but a little bleak. It is situated on solid rock and there is a score of small islets close by. With the aid of weasels, they unloaded 500 tons of stores in five days. At time of writing, it was light up to 2200 hours, enabling work to proceed to a late hour. He is awaiting the installation of the 15 kva's. before getting the rig out of its box. To while away the time before the Kista Dan departed, Bill stamped over 22,000 letters. He gives the bearings of the location as approx. 67 36 South by 62.53 East, and sends his best wishes to all and hopes to make hundreds of contacts later.

NEW SOUTH WALES

The March general meeting of the N.S.W Division, held on 26th March, was spoilt by a general black out in Sydney, extending from 5.45 till after 7.30 p.m. Consequently only 58 members turned out to hear Don Lindsay lecture D.M.E. (Distance Measuring Equipment). Mr Lindsay is no newcomer to the N.S.W. Division, being one of the leading executive members of the W.I.A. Council around 1927 and 1932, before work at A.W.A. gave him enough radio. It was very nice to see the "old 2DY" once more "back in the Institute." As with all lectures given by Ham to Hams, it was very interesting and our only regret was that our numbers were so small on that particular night. It did show the power the XYL still has over the OMs in VK2.

At the conclusion of the lecture, there was a little time left for general business and the President explained the idea behind the taking of an expression of opinion "by ballot on the proposed amendments to our articles." To date the figures seem to show a big majority in favour, but as in election figures, the early ones may not be the last ones. The next meeting will be the Annual General Meeting and it is hoped that the VK2 Division will be thoroughly discussed and the new Council be given a line of policy to follow during the year. As shown in the Annual Report, the present Council have acted on each matter set out in the policy published in its first Bulletin last June.

SOUTH WESTERN ZONE

Geoff 2BQ, at Tumut, active on most bands experimenting with 144 Mc tx and rx for mobile operation. Ross 2PN also experimenting with 144 Mc. gear. Don 2RS, at Albury, has his new all-band p.a. together, using QRP for the time being, has a good sig on 80 mx from new QTH. Hope the tomatoes ripen Don. Stewart 2PL, at Griffith, heard occasionally on 80 mx and 40 mx; has been busy building additions to QTH. Lyn 2AQE, at Coolamon, active on 80 and 40 mx, has been revamping an 155 rx; should be a good asset to the shack Lyn.

Ray 2APZ, at Leeton, not heard for ages; what's the trouble Ray? Looks like too much other work, for Ham Radio. How about coming on the band and letting us hear the cheery voice again? John 2AQF, at Deniliquin, has been experimenting with 144 Mc and has a beam approx. 60 ft. high. John is building up a 144 Mc tx We are looking forward to the day when we work you on 144 Mc. at Coolamon John. Art 2EW, at Albury, heard on 40 mx; hear you have been after the DX on 20 mx Art. We have signed up another associate at Coolamon, making two in all, latest being Stan Abbey.

Don't forget fellows, the zone hook-up at 1930 hours on Wednesday evenings on 80 mx.

HUNTER BRANCH

The Annual General Meeting of the Hunter Branch W.I.A. was held on Friday, 12th March, at the Tighes Hill Technical College. The President, John Clarke, opened the meeting with 16 members in attendance, including the State President, Jim Corbin, 2YC.

The main business of the night was the election of officers for the ensuing year. The officers elected were as follows President, Lionel Swain, 2CS, Vice-President, George Lee, 2AGD, Secretary, Charles Archbold, 2ARV; and Bill Hall, 2XT, was re-elected Treasurer. A motion of appreciation for the stirling services rendered by the retiring members was moved and carried by acclamation. The election of an Auditor was stood over until the April meeting. A Social Committee was elected, comprising Jim 2ZC as Social Secretary, and Harold 2AHA, Les 2AOR, Lionel 2CS and Frank Stobbs (associate). Les 2AOR was also re-elected zone officer.

A meeting of the Branch Management Committee was held on 18/3/54 to discuss matters relating to the Branch station, 2AWX, also to organise a Hunter Branch hook-up one night a week, and to arrange a syllabus of lectures and films for future Branch meetings. The Hunter Branch hook-up was arranged for every Monday night at 7.30 p.m. on 7140 Kc. Another meeting of this Committee was held on 25/3/54 to run through two tapes so as to arrange sketches, circuits, etc., to use in conjunction with these tape recorded lectures. The Committee's good intentions were shattered, however, when they discovered that double track tapes do not play back at all well on a single track machine. Before the Committee members departed, a recording of a few words from each was made and ended with Lionel 2CS giving his impression of the exploding of a H-bomb.

The last two Hunter Branch hook-ups have been successful, with many members partici-

pating. During the hook-up on 29/3/54, the stations operating were 2AHA, 2XT, 2AGD, 2ADS, 2ARV, 2ASJ and 2AWX. Also listening but not operating were 2CS, 2XV, 2AFS and others so far undetected.

The Hunter Branch will not be well represented at Urunga this year. So far Syd Daniels and Les 2AOR and XYL are the only ones known to be definitely going. So it looks like the prizes will go to some of the other zones for a change.

Jim 2ZC has taken some portable gear as well as fishing gear with him to Forster and has been consistently working the Newcastle boys. The "grape vine" has it that Jim has a fishing line in one hand and a mike in the other, and has a liquid lunch through a straw. Ron 2ASJ, "the man with the golden voice," gave everyone a pleasant surprise by coming on 7 Mc. on Monday night 29/3/54 and wishing the boys best 73. Thanks a lot Ron, the gang appreciated those few words from you after such a long time and we are all waiting the day when the Doctor gives you the "all clear." Activity on all bands has been at a minimum over the last month, especially at night, but the hook-up on a Monday night might encourage the boys to extend their activities to other nights in the week.

Arrangements are in hand for the next Hunter Branch mid-winter Social and the Social Committee can be trusted to come up with some novel ideas to make this Social as big a success as last year.

The next meeting of the Hunter Branch will be held on 14th May at 8 p.m. at the Tighes Hill Technical College, the lecturer for the night will be Jim Cowan, 2ZC, and his lecture, "Building a V.F.O." This should create much interest, so keep this date in mind, the 14th May, for the next Hunter Branch meeting.

NORTH COAST

There are two main topics on the North Coast at present—floods and Urunga. The true story of Amateur activities in flood time will probably never be related, but I'm sure everyone realises the value of such activities. Each flood seems to bring forth complications which did not exist in previous floods and as is to be expected, some action takes place soon after to combat the new problem. The last series of floods inundated a much larger area than previously and as a result a far greater number of Hams were necessary to cope with all the essential traffic that has to be passed at those times. This in turn caused a crowding of frequencies which was very evident to anyone monitoring flood activities, and suggests some revision of frequencies available for this purpose—possibly a daylight and night time frequency for each of the major towns. Any reader with some ideas may care to write and let me have his views.

At Grafton recently a conference was held among the North Coast broadcasting station managers and I believe some scheme was worked out for inter-town communication by those stations. Unfortunately I do not know the details of the conference. Another conference took place at the shack of Doc 2LH of Lismore among district Hams and P.M.G. representatives (2RK covers this in his section of the notes.—Ed.) A welcome letter from Alan 2ASO, of Kyogle tells how he struggled home from Armidale, by car, foot and finally hitch-hiking to do what he could for his home town. In all, Alan passed some 103 messages to their various destinations (making my 18 look insignificant, hi!) by way of 2ASA in Wyong, 2AA, 2WI, 2ADE, and 2AHI, with quite a few others standing by in case.

Our friend, Crieff 2XO, has been rather ill of late and spent a few days in Bellingen Hospital, but I'm pleased to say he is up and about once more and looking forward to a ragchew at Urunga. From Grafton, I believe that Roy 2NY had 12 inches of water in his house, whilst Terry 2AJS had but six inches to go. So much for floods.

Peter 2PA is very active on 80, 40 and 20 mx from Port Macquarie and has the place to himself as Lou 2AWS is holidaying around Bundaberg with Vic 4BJ, and Doug 2SH is rebuilding ready for the next Remembrance Day Contest.—2AHH.

Further information of the activities of Amateurs in this area has come to hand following a meeting in Lismore on 26th March. It appears that the energetic "Blue" 2AEU was the principal organiser of this meeting. Its object was to discuss aspects of the recent flood emergency network with representatives of the P.M.G's. Department. The Amateurs present at the meeting comprised nine from Lismore, Kyogle, Murwillumbah and Casino. They were 2LH, 2UC, 2AEU, 2ASO, 2RK, 2ZY, 2ADE, 2AHI and 2SL. Also present were several other gentlemen, not Hams, and three officers of the Department. The matters discussed at the meeting are beyond the scope of this column, however it is consoling to say that the effort of the Amateurs is greatly appreciated by the P.M.G's. Dept.

Charlie Miller provided the link from Casino and Lismore to Police Radio in Sydney for flood emergency traffic. This untiring work and operating ability merits our praise. He was ably assisted by Ron 2AHI who handled telegraphic traffic for the Post Office from his own location. Tom 2LH bore the brunt of initial emergency in Lismore and operated a low power 6x from a petrol-driven alternator. We must acknowledge the fine effort of "Blue" 2AEU, who performed his duty as a Post Office technician admirably and made known to Postal Officers the service Amateur Radio could provide in the emergency.

Unfortunately Len 2LR was a flood victim, several feet of water entered his house and some of his equipment was damaged. We hope Len the damage is repairable and you will be on the air very soon.—2RK.

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VICTORIA

The Annual Meeting was held on the 7th April at the Radio Theatre, Melbourne Technical College, approximately 80 members and visitors being present. The meeting started late, due no doubt to the interest in the Call Book. A few advance copies were available and very few of those in attendance did not produce the necessary 4/6—or did they? On second thoughts, most of them produced "folding money." How come these gentlemen have so much cash so late in the week?

All the usual reports were submitted, adopted, received, confirmed or what-have-you to everybody's satisfaction. No ballot was needed for Council, as only sufficient nominations were received to fill the vacancies. Your Council now comprises Messrs Manning, Dennis, Ball, Duncan, Albrecht, Lemming, Hodge, Marsland, and Daniel. These fellows will not be heard very much on any band during the next twelve months owing to pressure of business.

It appears nobody wishes to be President of the VK3 Division—the old story of the willing horse. The VK5 gang will please restrain 5PS. However, Council in their wisdom will overcome this minor problem.

Somebody suggested that the Institute's technical equipment should be sold. This suggestion brought forth much discussion and, for the time being, the equipment will be retained. Steps will be taken to make the borrowing of this equipment easier. After all, who wants to lug a modulator and associated power supply into the rooms and possibly spend a couple of days trying to make the darned thing work when it can be done more conveniently on their own bench, where they can make as much mess as they wish without having to consider anybody else.

Our membership continues to grow; five associates and four full members being admitted this month. The Secretary read the names too quickly for me to copy, but the usual welcome is extended to them all.

The Librarian is greatly concerned at the number of magazines and books that have not been returned during the last few years. At present 180 magazines are missing, so chaps go through your books and return those you have with the W.I.A. stamp on them.

Certificates have been awarded to J. Duncan, A. Seedsman, W. Tregear and L. Moncur for their performances in the recent Marathon Tx Hunt. Watch out fellows, or you'll be placed behind scratch.

The following appointments have been made by Council—President: Mr. G. Dennis; Secretary: Mr. C. Gibson, Treasurer: Mr. G. Manning, Asst. Treasurer: Mr. J. Marsland; Asst. Secretary: Mr. W. Leeming, Qualifications Committee: Messrs. J. Duncan and B. Hodge, QSL Inward: Mr. G. Roper; QSL Outward: Mr. F. O'Dwyer; Magazine Committee: Messrs. Hogan, Marsland, Duncan, Higginbotham, Sewell, Fisher, Head, Pincott; Communications Secretary: Mr. D. Daniell; Publicity Officer and Sub-Editor of Magazine: Mr. K. Pincott. Class Manager: Mr G. Manning. Class Instructor Mr D. Dewhurst; Class Code Mr J. Lancaster. Script Writer, Mr. G. Manning. Technical Advisers Messrs. H. Albrecht, F. Ball, R. Henderson, L. Jackson; Contest Committee: Mr. D. McKenzie. Awards Committee Messrs. G. Dennis, B. Hodge. Disposals Committee, Messrs. G. Dennis and R. Bradshaw.

The next Hunt is scheduled for 2nd May. Full details will be broadcast by VK3WI.

The May meeting will be held on the 5th when the Swap Night will be held.

All members of the VK3 Division, and the V.h.f. Group in particular, were stunned to learn of the untimely and tragic death of David 3ED on 7th April. We extend to his family our sincerest sympathy on their sad loss.

Ron 3ARV is keen to contact anybody interested in astronomy. He can be contacted at 18 Madden Grove, Burnley, E.1.

Jack Kling, 3AJQ, was admitted to the Alfred Hospital in the early hours of the morning of 31/3/54 with haemorrhage from duodenal ulcers and has had blood transfusions amongst many other things. He is on the way to recovery and it is hoped that the time you read this he has returned home.

The late news for this month concerns the Two-Band Scramble on Sunday, 11th April. From what I hear there was very little activity on any band but 40 mx. If I may be permitted to pass a few comments, the activity on Sunday afternoons is quite good, but during

OBITUARY

ROSS HARRIS (VK3FL)

Members of the W.I.A. throughout VK will read with regret the call sign in Silent Keys this month of Ross Harris (VK3FL). Ross was a keen Ham for many years post-war and his signal was heard on most bands with phone and c.w. regularly until his unfortunate illness took charge. His call sign was early in the open DX C.C. for VK5, and his operating procedure was a model for all to emulate. During the last war, he joined the R.A.A.F. and rose to the rank of Flight Lieutenant in the Signals Section, seeing active service in the N.E. area, being wounded by shrapnel. He was a keen member of the VK5 Council and was for a time acting as Assistant Secretary, retiring from the Council during 1946-47 when outside activities did not permit him giving his usual attention to Council duties. At the time of his death he was Adelaide Manager for A.P.I. Cables and Insulation Pty. Ltd., and was one of the few business men who could do a fellow Ham a favour and make him feel as if it was a pleasure. To his parents and his sorrowing wife and child, we extend our deepest sympathy and understanding, and say without hesitation that Amateur Radio is the poorer for his passing.

DAVID JONES (VK3ED)

Deep regret is expressed throughout Amateur circles at the untimely death of Mr. D. O. Jones, better known as David VK3ED, on the 7th April, 1954, at the age of 38 years.

As a full member and a past councillor of the Institute he devoted himself wholeheartedly to the interests of Amateurs in general and investigations in the very high frequency part of the spectrum in particular. His efficiency and natural courtesy gained for him the highest goodwill and respect from his acquaintances.

In addition to his Amateur activities, David was a member of the staff of the Defence Research Laboratories, Maribyrnong, holding an appointment as Sectional Draftsman Electricity Section.

The sorrow of his passing is measured by the widespread sympathy extended to his widow and two young children, Elizabeth and Ian.

The funeral at Fawkner Crematorium was attended by a large number of friends and colleagues.

SUBSCRIPTIONS

● Please pay your Subscriptions PROMPTLY when due. Failure to do so may result in the loss of valuable issues of "Amateur Radio." High costs of production make it necessary to limit the number of extra copies printed each month.

CHANGE OF ADDRESS

W.I.A. members are requested to promptly notify any change of address to their Divisional Secretary, not direct to "Amateur Radio."

the evenings the bands are virtually deserted. Why not have the Scrambles from say eight till ten (2000 to 2200 hours if you prefer)? The commercials could use a little competition anyhow.

The scribe in the City of Urgers—sorry Lurches has been very quiet during the last few months. The 7193s must have got the better of him. As for the Parafield dust bowl—no comment. Of course there is one good thing to be seen in VK5—the Melbourne Express. Alright Tom, put the red pencil away.

CENTRAL WESTERN ZONE

Along with a big improvement of conditions on 80 mx has come a likewise improvement of zone hook-up attendances. Now the cooler weather has reached us, conditions should remain ideal and we can look forward to some really good Wednesday night ragchews.

As in the past, with the coming of autumn, we revert back to the earlier commencement of the zone hook-up, i.e. 1930 hours, so as from next Wednesday, 5th May, we will start at 1930 hours instead of 2030.

It is pleasing to note that both Dick 3RR and Herb 3NN are really well once again. Last heard, Herb was sinking a few holes in preparation for a shack to end all shacks. Bill 3AKW now has his mobile gear working f.b. in the boot of his car and should have a pretty good work-out with same down at the S.W. Zone Convention. Charlie, formerly 3IB, now 1AC on Macquarie Island, is still putting a consistent signal here into VK3. He seized the rare opportunity to send some snaps back when a ship made an unexpected call a few weeks ago and now we know one thing he did forget to take south with him—a packet of razor blades, hi. The beard appeared to be about two inches long in four months, should be a real hill-billy special when time is up, Chas. Incidentally, some of the boys QSP these notes on to Chas, so I'd better behave myself. Best regards from the gang Chas and may your hot water bottle never seize up—sorry freeze up.

Lin 3ARL has a much improved signal with the new antenna, a half wave on 80 mx fed with 300 ohm line. Trev 3ATR still wrapping the S meter around here, even with a couple of bottles out of the final, hi. Next month I hope to have a little more news as most of the last month was spent out of the zone on holidays, etc., so until then, cheers.

EASTERN ZONE

Our regular journalist, Leo 3SG, being laid up, following a duel with a rotary hoe, 3AHK has kindly volunteered to do this month's notes. Graham 3QZ and XYL are at present on a holiday cruise to New Guinea and Graham was there during the war—but this time he had to pay his own fare, hi! David 3DY has been in camp again, a sturdy lad now—M. & V. must agree with him! Jack 3FK is busy building a new tx, having discovered—the hard way—that an AT5 on 80 mx is a cert for b.c.l.

Len 3LV now kid whacking in Moe, is a regular on the Sunday hook-up with a first-class signal. 3AOD and 3ZD keep Warragul on the air. Norm 3ANC at Toora is doing a spot of movie operating at the local theatres, but manages to put the rig on the air occasionally. Hon ("Grid Drive") Jardin, 3PR, still has the heftiest signal in the zone—a miserable 80w. I am told by 3WE that the visit of a certain R.I. to a certain mountainous area caused such a rush on b.c. licences that the P.M.G. Dept. will soon be reducing postage to a penny again, because of increased revenue! Associate Alf Mockrell, who is also President of the Sale Sub-Branch, got married in March. We all wish them luck, but remember, Alf, as a portly parson says, "DX Before Dishes!"

By the time you read this Keith 3SS and self will have paid a visit to VK3 per caravan. If all goes well, we shall have had a very good trip. Leo should be on the job for next month, so send all notes to him.

NORTH EASTERN ZONE

The North Eastern Zone Annual Convention for 1954 has come and gone, leaving the locals very pleased to have seen the roll-up of visitors at the event, which included some of the senior officers of the Institute.

Jim Herd, 3JK, was elected President for the ensuing year as Jack 3PF must have firmly declined nomination for re-election, and Rex Anderson, 3UR, and Hugh Fogg, 3AHF, are Jim's Vice-President and Secretary respectively. The rest of the offices were farmed out as follows. Zone Correspondent 3FD, Communications Officers were Ken 3KR and Col 3WQ, and the Emergency Co-ordinator is Henry 2HP.

Pressure of work stopped Alex 3AT, Stan 3AGT, and Les 3ALE from getting as far as Wangaratta. 3AKC was right on the job showing us over the local b.c. station. Howard 3YV was in good form and Keith 3JC was detailing activities on 20 mx. Alan 3UI apparently follows 6 mx, where he keeps abeds with Peter 2APT and Syd 2CL.

Des 2BP entertained the gathering with the aid of Henry 2HP and his patent aerial raiser. Lex, our Associate in Benalla, would like to exchange on loan 'Radio and Television' for copies of "CQ" and "QST". Doug 3IJ is now living out at the Mangalore Airport, where Chas 3ACW could be heard working on the Convention day. Murray 3HZ is busy on his commercial interests. Des 3CO has hopes of building a proper Ham shack one day soon.

The address of George 3AHN has been overlooked so it is not known if he is in the North Eastern Zone. George 3GD was missing, as was Tom 3TS, but George has been heard on 20 mx lately. Gordon 3XU was noted at the Convention as was Ron 3AQG. Frank 3ZU has been landed, tentatively, with the next Convention in Euroa. Associates Clarry Garrett and Vern Wyatt came down to the Convention from Cobram, and Jim Harrington took the XYL and family up from Mispoll.

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QUEENSLAND

Sorry for no notes last month fellows. I thought a reminder of the two annuals more to the point, but how was I to know "A.R." would be late hi!! The Annual General Meeting saw the conclusion of business for the year. To most, an unsatisfactory year with conditions as they are, to the Division financially an improvement, a slight loss in membership, mainly associate and student members, but our greatest loss is in the attendance at our monthly meetings by the local chaps. Looking back over the year we have had members attending from Bundaberg, Rockhampton, McKay and Townsville etc. and yet a lot of Brisbane members haven't been present in years.

John 4WJ, of Guilpie, and Bob 4NG, of Rockhampton, were present at the Annual, and the visitors included Frank VR4AE, who was given a nice welcome by the boys who had added another country by his activities. Frank informs me he is on his way to the Urunga Convention at Easter and will be seeing the VK2 boys (VK5 scribe please note).

The Council was elected "en bloc" so till it meets, I will not be able to list your Council as individuals and their tasks, but there are a few changes in the personnel. The President unfortunately kept his report for the Annual Dinner, being misled by previous reports, but fortunately gave a good resume of it.

The Contest Committee requests all logs for the VK4 Intrastate Contest to be in by the end of May. So if you want your points tallied, please be prompt.

The Annual Dinner was the best attended function we have had this year, and with guests some 40 odd were in attendance. One and all had a most enjoyable night. The speeches were varied, though short, which was all to the best, that it shortened proceedings somewhat. Among the guests were Mr. Conroy, from the Wireless Branch, Vern Kenna, from Wireless Technical Branch; Howard McGregor, from the C.S.I.R.O., and of course an address by Mr George Glover, on tape from F.E. which amused Mr. Conroy somewhat, being referred to and not knowing by whom.

Mr. Conroy presented the certificates to those present who had gained them in past contest. The outstanding certificate was for Vince 4VJ for an outstanding clean sheet on s.s.s.c. Our old friend, Joe, was their with his selection of jokes. Jim 4PR presented "Don Pedro" after winning the necessary regalia. I'm told Shakespeare isn't one of Jim's favorite writers. By and large, the night was most enjoyable. Did hear one chap ask the R.I. did he think he was getting out as the people next door could hear him on their b.c. rx.

THE PRESIDENT'S REPORT

As presented at the Annual Dinner, 1954:—

"It is my privilege and pleasure tonight to present a report on the activities of this Division for the last financial year 1953-54. Though the total of enrolled members has dropped, due to the curtailment of student classes, owing to the difficulty experienced in obtaining the services of an instructor this has resulted in the possibility of thirty or so members less on our rolls. However, the Division has admitted to full membership several new members during the year.

"Finance. Mr Charlie O'Brien has continued his expert handling, and financially the affairs of the Division are quite sound. It was found necessary during the year to purchase a typewriter for correspondence and stencils for 'QTC.' But this, in conjunction with the duplicator, is an asset and will last for many years.

"QSL Service. The QSL service is a free service to members of this Division and has been handled in an excellent manner by Mr Jack Files (incoming cards), and Miss Clare O'Brien (who despatches our outward cards).

"'QTC'—This has appeared on schedule throughout the year due to the willing services of the various editors, Messrs. Paul Green, Jim Baker and Tom Athey in forwarding m.s. to our printer, and despatcher, Mr. John Pickles. Mr. John Ross was responsible during John Pickles' absence in January.

"Library.—The Library service has been handled by Mr. Bill Faber, and has been fully availed of by library members, enquiries for books have come from both country and VK3 members.

"The Technical Library has been attended to by Mr. John Pickles and this is another free service by this Division, equipment being available on application to the Secretary. At the present time further equipment is being constructed, thereby widening the range of test equipment held by the Division.

"Contests.—The Contest Committee is functioning smoothly with Mr. Aussie Harris as chairman, and Mr. Neville Jones its Secretary. Other members are Messrs. Clive Cooke, Jim Hope and myself. Much thought has gone into framing the various contests and their rules. The country member is always considered when framing any contest and its rules.

"VK4WI.—Station VK4WI has presented the weekly news service to members every Sunday morning on two bands. Thanks are due to the previous managers in Mr. Jim Baker and Mr. Aussie Harris; myself being the present Station Manager. Items of news and of general interest are always needed and welcomed for inclusion in these broadcasts.

"V h.f.—The V h.f. Group was initiated under the chairmanship of Mr. John Ross and it aims to facilitate exchange of information on v.h.f. equipment, to centralise v.h.f. testing of equipment, and to promote interest in v.h.f. communication.

"Country.—Our country representative, Mr. Tom Hewitt, has continued his work, and has brought many matters dealing with country members to the Council, except when shift work intervenes, Tom is always there with the Sunday hook-up. Thank you Tom for your work.

"Federal.—The position of Federal Councillor has been carried out very efficiently by Mr. Arthur Burton, who is the liaison between this Division and Federal Executive.

"Student Classes.—These classes for the last year were conducted by Mr. Tom Athey, now in Townsville. Mr. Ray Lewis, who has gone to Darwin, Mr. Jim Hope, a Vice-President, is continuing the tuition until the conclusion of the [redacted].

"To all Council members I would like to express thanks for the many continued hours of work behind the positions occupied. To the new Council, I wish you success in Council and Divisional affairs. The retiring Council has always had the welfare and progress of this Division and the Institute before it in all of its activities.

"I appeal to all members to support the Council and to recruit new members where possible and to back the W.I.A. to their fullest extent.

"In concluding, Regulations have been issued for the Amateur in his operating, I urge members to comply with these and so allow our organisation and the Amateur himself to receive the continued confidence and consideration which we have received from the Post-Master General's Department."

—John A. Weddell, VK4FT, President.

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SOUTH AUSTRALIA

The VK5 monthly general meeting for March took the form of a "Buy and Sell" night and would have also introduced the new President to the members. I say would have, because for some reason or other, the new President failed to turn up and the chair was occupied by the old President, much to the annoyance of several persons in the front row who had been telling him rather forcibly to get out of the chair, to stop "hogging" the Presidency, to "wake up" to the fact that his days as President were numbered, and lastly to make way for a better man.

Nonchalantly banging the table with his fist in lieu of a gavel, the same having been handed to the new President at the last meeting, the "old" President declared the meeting open and with Machiavelian cunning, introduced one or two debatable subjects into general business with the idea of prolonging the business side of the meeting to make up for the unexpected lack of radio gear to buy or sell. Council has been waiting for something like this to happen, because under the law of averages the time had to come when everybody said to themselves, "What's the good of bringing along some gear, there is always more than they can sell." Yes, believe it or not, there was only enough gear brought along to just keep the night going.

The auctioneers, Dougal 5BY and Ross 5LW, with their usual canny summing up of the situation, managed to introduce enough horseplay and funny ha-ha's into the proceedings to

make a very entertaining evening for all present, but it was a touch and go. Nevertheless, the applause that greeted their efforts at the end of the meeting was a sure indication that once again the VK5 Division had come through a doubtful situation with flying colors. All present will now stand with bared heads whilst the President leaves the room! "All right, all right, it's my last chance to get into the limelight!"

The particular item of business that was introduced with Machian-Machica-Mackaik—well anyway, what I said before, cunning, was just what was to be done regarding the trophy that was won by the reigning v.h.f. champion, Mr. Warwick W. Parsons (5PS) for his excellent work on 288 Mc., and re-donated back to the VK5 Division with his usual open-hearted generosity. Loud cheers and yells of Vive Pansy, Vive Pansy. Quite a lot of suggestions were received from members present, but none seemed to quite suit the bill until that master of sagacity and perspicacity, Les 5LC, suggested that it be awarded to the highest scorer for VK5 in the 1954 Remembrance Day Contest. It was seconded and passed before anybody had time to even wake the President up, and everybody agreed that when it comes to hitting the nail on the head, then Les has just what it takes!

The President took the opportunity of wishing Eric 5LV and Ron 5LF, two brothers, an enjoyable trip to England and hoped that they would again some day be present at the VK5 meeting, and also that they would keep up their contact with their home State whilst away by having the magazine sent to them in the "Old Country." Among the very welcome visitors were George 6GH (6WI), our regular visitor with the same name as the old President (2AHS/MM), and Messrs. B. Jellett, L. Whyatt, and one or two whose signatures looked as if they had been signed with the pen held between their big toe and the side of the table. To these gentlemen we say come again and we hope that you all enjoyed yourselves. The meeting closed at the somewhat early hour of 10.45 p.m., but it was not until much later that the last member was tactfully thrown out into the street. The President for the night made himself a little more obnoxious than usual by openly boasting after the meeting that even an earthquake couldn't move him out of the chair for VK5, and was last seen being forcibly thrown out of the back door of the clubrooms by several irate members who could take no more of the heifer-dust!

Roth 3BG was over in the premier State this month, covering the Royal Visit for his paper, and managed to squeeze in a couple of visits to the local boys that he has contacted at various times. He rang the B.B.S.S. and had a chat with one of the back-room boys of that station, although for some reason or other he did not attempt to ask me for my opinion on the International situation or my reactions to the state of Denmark. Jealousy I suppose! Of course, it could be self-preservation!

Received a letter this month from Wally 5DF, but as it contained mostly details about the v.h.f's., I was forced to reluctantly pass it on to Gordon 5KU. Anyway thanks for the thought Wally, and my regards to Jack 5VJ and the rest of the gang. Before you read this, I will have been over and met you all personally, I hope.

SOUTH EAST AREAS

Well it's on again, down comes the notes from the S.E. and all they mention is the v.h.f's, curse it. Now I will have to take a packet and a half of nerve tablets and whip up my imagination (Not too much—Ed.) to fever heat. Here's hoping that I succeed! 5CH has purchased a 522 tx and it is expected that he will be heard on 144 Mc. c.c. signal; Claude is making good progress in the construction of his new shack. 5TW has had a fairly quiet month, but has been heard on the air at odd times. 5MS has been heard on 20 and 40 mx at odd times and also another band which I will not mention. Funny thing, Stuart, I hear you at peculiar times coming from peculiar directions, but never for long. I have not contacted you since I left Henley Beach. 5JA has as usual not been heard for the month. 5KU hopes to be in the new shack before these notes are printed and it goes without saying that Erg will show a decided increase in activity on the air.

5CJ has had rather a busy month, but not with radio. Having shifted into a new home (that's how I look after my espionage agents), Col is finding plenty of reasons why he is still not on the air as yet. He has succeeded in taking over one of the rooms in the house for a shack, but he is not over confident as to how long he will remain in possession. Col has high hopes that the new location will be much quieter than the last, but as he has not erected the aerial as yet, it is still in the clouds. Aren't I a wit? I could have sworn I said wit. My new teeth!!

Another visitor to the fair city of Adelaide this month was John Moyle (2JU) and, of course, it goes without saying that he paid a visit to the B.B.S.S. I happened to be on duty the afternoon that he arrived and was able to extend to him the official welcome to the City of Churches and also to the Best Broadcasting Station in the State. In the excitement of swapping fairy tales as to DX, etc., he forgot to offer me double the salary paid to me by "A.R.," but no doubt he did not want to commercialise our first meeting, and anyway, I know the magazine would not release me from my contract, signed in a moment of weakness. (Less padding or you may not have a contract.—Ed.)

Applications for the new call sign book have exceeded all expectations in VK5 and should be a sell out as far as we are concerned. Everybody is anxiously awaiting the date of publication and take their hats off to the gang who are doing all the hard work. By the way, everybody has praised the proposed design of the cover, especially the position of the VK5 card. However what I want to know is the QTH of my fellow scribes in VK1 and VK3. Sorry to be so hard to get on with.

Quite a peculiar position exists in VK5 regarding the new Limited A.O.C.P. It would appear from the official information released in the magazine that the matter is well in hand and that it is only a matter of time, although a number of associate members seem to think that a little "gee-up" could be employed with advantage. Several outsiders even have gone as far as to suggest that a small hydrogen bomb underneath those higher up might help. Whatever the answer to the problem may be, it should be found, because the Divisions must be losing face with both sides. The local Authorities know nothing about it, and the Division knows too much. All of which adds up to an embarrassing position for Ham Radio, and one which plays right into the hands of the few who do not want to see any good in having an Institute to represent the Radio Amateur in VK. (The Authorities are awaiting Canberra to change the W.T. Act.—Ed.)

In VK5 we have an official publicity officer, whose duty it is to put the W.I.A. on the map and keep it there. The VK5 publicity officer is one of whom the Division is particularly proud, and one who is a hard and busy worker for Ham Radio. I realise that the Division has a high regard for my ability, but was bitterly hurt this month when Tom 3HX posted me a personal letter addressed to the Best Broadcasting Station, Adelaide, South Australia. The reason for my wounded feelings was that I eventually received the letter, re-addressed from the ABC, and thanking me for the compliment I had paid them. I am wearing a false beard these days whenever I am in the vicinity of the ABC studios, and am waiting for the appointment of a new Divisional publicity officer. Such is fame!

During the Royal Tour rehearsals for broadcast, it was the practice each morning to have a quick run-round the various broadcasting points as a technical line-up to see that all the gear was OK. Naturally the commentators would not be able to come down to the level of speaking on the microphones to a non-existent audience, and the technicians acted as stand-ins. As they announced their particular location and name, it sounded more like a line-up of Amateur Radio in VK5. Nice work fellows.

UPPER MURRAY AREAS

The notes for the Upper Murray for this month inform me that the news revolves principally about 144 Mc., which, of course, the signal for, me to gracefully fade out of the picture. Nevertheless, it takes more than a lack of news to stop me writing, if I get my back up, and therefore I am going to carry on, news or no news!

The monthly meeting for March was held at the QTH of Murray 5CF at Berri and the gang were favoured with no less than five Interstate visitors, 3GZ, 3TI, 3AJU, an unidentified VK3 to whom my scribe humbly apologies, and last but not least 2AHM, who brought the boys along from Mildura in his Jaguar. A four wheeled one, not a two wheeler like mine! The reason for their friendly visit was mainly to assure the Upper Murray boys of their continued support in endeavouring to contact on 144 Mc. (that dreaded word!) Efforts to contact on 7 Mc., 144 Mc., plus letters, plus telephone calls, has only confirmed the opinion that apart from smoke signals, there was no other means possible to ensure reliable contacts between the boys and therefore they all came along to see just what the VK5 boys looked like. They were somewhat staggered to find the amazing resemblance between them all. Harry 5KW took the opportunity of propounding some of his theories into the ears of 3AJU, and I have been advised that if Harry could be persuaded to put them on paper, they would be more than suitable for the magazine. What about it OM?

Hurtle 5RE has steadfastly refused to be roped in for the job of local spy, thus giving Tom 5TL a rest for a year. Hurtle says that his writing could not be read by me, and when Tom suggested a hammer and chisel and a block of stone, Hurtle said that he did not think that I would react too well to a load of rocks arriving every month at my QTH. You might have something there OM. Tom 5TL at last received his missing relay per medium of 5KW and thinks that he got his money's worth despite the length of time that he was in getting it and the time that he took to pay for it! Fred 5MA reports that he has not a tx in workable condition, although he did not amplify this remark. Incidentally, Fred, are you all clear on that article that you sent me for the magazine? I told Laurie 5SL to pass on to you that I had despatched it to VK3, but you know these city slickers!

Murray 5CF, due to domestic arrangements, has had to remove all of his gear from the room where it was housed, and it now reclines in the passage, disconnected but for once nicely cleaned and dusted, thanks to the XYL. Rumour has it that he now fishes for fish and not DX. The two tapes played at the meeting, the President's report and the lecture on Radio Sonde, were well received by all present and favourably commented upon by the visitors, especially the honeyed words of the President. Ho Hum!

Hughie 5BC, being a dyed-in-the-wool v.h.f. man, only gets a mention in these notes because he piloted the Interstate visitors from his QTH to the meeting, and also for the fact that I knew him when he was proud to be heard on "twenty"! The reports on the reception of 5WI from this area seem to indicate that conditions are patchy, although a couple of contacts with the station have been reported after the official broadcast. The news from this area closed with a back-handed compliment by saying that the Upper Murray boys are pleased to see that the VK5 Council is endeavouring to keep the country boys abreast of the current developments by means of tape recordings, or should it be that they are enabling them to catch up in the things they should have had before!! Tom, how could you be so brutal? I hope Rattling Salvation strips her gears and bends her connecting rods!!!

Not bad for no news above 6 mx eh? They don't call me "Padder Parsons" for nothing! OK, OK, I know that I should have said below 6 mx, but it depends upon the way you look at it. After all, the bottle can be half empty or half full, which ever way one sees it.

Well, twelve months has come and gone, and once again I will have to twist Doc's (6MD) arm to make him write the notes for next month, as well as the weekly column in the daily paper. He puts on a great show of reluctance, but he fairly rushes this opportunity of getting his own back, as well as grasping with both hands the chance of putting the spotlight on the foibles and weakness of the VK5 scribe. To put a spoke in his wheel, I take great pleasure in announcing that I became a grandfather this month, and Associate Member Bob Turner became a father. The lucky boy is named Christopher Warwick, and if anybody dares to tell him that his grandfather is called "Pansy," then I will become as wild as wild and start tearing up sheets of paper. Incidentally, to all those good friends who have been ringing me up with wheel chairs to sell, making rude suggestions as to beards, crutches, and old age pensions, etc., I can only refer them to the "Merchant of Venice," in which a certain gentleman said: "Why should a man, whose blood is warm within, sit like a grandsire cut in alabaster? Grandsire I may be, but thank heaven, my blood is still warm within!!"

Or to put it more in my normal manner: A woman is as old as she looks, but a man is only old when he stops looking. Oh well, it is nearly sunset and time I said my prayers and took my teddy bear to bed. It's been a busy day!!

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WESTERN AUSTRALIA

As it was expected at the last general meeting, the lecture and demonstration by Peter Piggford provided an interesting and instructive hour or so. It is on rare occasions that the Ham with his nose well into ham gear gets the dope on the commercial use of equipment he finds such pleasure in constructing, tearing to bits, and using the bits to start on something else. The lecture dealt with the radio network of the Fire Brigade, the base equipment, and portable sets fitted to fire engines (I think they call them by other names now). The gear is f.m. on 70 odd megacycles and is compact and efficient, but jibbed a bit when used the umbrella of a broadcast radio mast; lack of earthing, etc., would be the cause. When Peter gave a call to the Control Station there was no turn out of the Brigade because the operator on duty would know Peter's voice. The technical section of the talk was well handled, and just the amount of detail required by Hams was given. A number of questions concluded the talk.

Four Tasmanian Council members (left to right): Messrs. T. Evans, K. Johnston, L. Edwards, B. O'May. Mr. L. Edwards is holding the Sesquicentenary Medal presented to Tasmanian Division, W.I.A., for their part in the Exhibition in Hobart during January. Block by courtesy of "The Examiner," Launceston.

VK6 has lost one of its earliest exponents of early radio, i.e. Bert Stevens, who under the call 6BN was prominent in W.I.A. activities as Secretary and several other positions as Secretaries in early days had to be. Bert died on 29th March after a long illness, and had not been active for many years. All old Hams who knew Bert, extend their sympathy to Mrs. Stevens and family.

6GS has forsaken his call sign and Western Australia to transfer to the P.M.G. experimental lab. in Melbourne. Blake Horrocks first started his Amateur activities in Harvey in the south west, and from 40 to 6 metres he went on to t.v. experiments with the scanning disc with no small amount of success, particularly as he had a wobbly d.c. town supply to operate with. He then joined the P.M.G. Department and moved to 6WA and his present occupation, on looking back to early days, could be described, as they do in the press, "Harvey boy makes good." We all wish him a fruitful stay in VK3, and a return to the West.

Two pieces of equipment have been submitted by members for the trophies this year. A video sweep unit from 6EC, Eric Cornelius, and a grid dip meter from 6OR, Jack Hoar. By the way, 6EC is looking for a 6FP7 tube to help him along with his t.v. experiments, so if any member has one in his bottom drawer, bring it out.

Winter conditions has set in and the use of 80 mx for the W.I.A. broadcasts seems to be more suitable than 40 mx.

Jim 6JT has just gone on his inspection trips again, as Communications Superintendent Aeradio, it takes in Cocos Island as well. Jim is well known by VK3 of days gone by, and wireless is as persistent as malaria—it never leaves one. 6GH, who for a number of years, with breaks on leave, etc., has conducted 6WI has done a very good job. Country members for whom the news is conducted owe a debt of gratitude for the consistent effort and job done by George.

Your scribe, who accepted this office to fill a gap, has found the gap an extended one, and will be looking for another VK6 to carry on with the notes, bigger and better, for next year.

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TASMANIA

The Annual General Meeting was held at the 7EX Theatrette in Launceston on Saturday, 26th March, and was very well attended, 42 members being present. This was the first meeting to be held at Launceston and organised by the Northern Zone, and I'm sure all present will agree that it was a complete success and a credit to those who organised it. All zones were about equally represented, which is as it should be for an Annual Meeting.

Members elected to the various positions for the coming year are as follows: Patron, L. Crooks; President, L. E. Edwards; Sec., W. G. Tait; QSL Manager, R. Calvert; Traffic Manager and Broadcast Officer, R. O'May; Auditors, G. Richardson and A. Finch; Publicity Officer, L. Edwards; V.h.f. Officer, C. Wright. Council members elected were Messrs. R. O'May, T. Evans, R. Fulton, J. Brown, K. Johnston, L. Edwards, and T. Allen.

After the meeting, those present adjourned to the Criterion Hotel for the Annual Dinner, which turned out to be excellent fare washed down with the cup that cheers and served up by pretty waitresses—who said pretty? Was it 7FM? The festivities continued until well into the following morning, ending up on the footpath outside the 7LZ shack, so I'm told, much to the disgust of the neighbours. By the way, the photograph which appeared in the local rag was taken during the meeting, not after the Dinner, in case you didn't know. Somehow I think the photographs got mixed with those from the Chicago safebreakers' Convention, but I'm not sure of this.

I paid a visit to Stanley recently and found 7RL working with vegetables and sausages, etc., instead of knobs and dials; good luck in the new venture Reg. I hope you can still find time to thrash the ether occasionally. Bert 7BC is now also residing at Stanley and looking around for accommodation so that he can import the wife and kids. Should be plenty of opportunity for DX on 144 Mc. up there Bert.

And while on the subject of 144 Mc., it looks as if the band may liven up in the south soon with 7OM, 7MY and 7RM building up crystal converters. It will be interesting to see how 7MY is received in the city from his location at Sandford, but Alan says he will put a repeater on Mt. Mather if he can't get through direct. I must put the twinlead back on my beam. Forty mx got quite a shock the other Sunday when 7BJ came on after a silence of many years. I believe the S meter at 7AL also got a shock. Better watch out Tom, Joe has put up a half wave end fed for 7 Mc.—trying to outdo the T2FD I think.

NORTHERN ZONE

Last month we were privileged to be able to hold the Annual General Meeting and Dinner up here, and we all thoroughly enjoyed having other zones and the Tasmanian Division members present. The North Western gang had a good force and amongst the nine members, 7KB, 7SF were noticed, as well as 7EJ, now doing well on the bush pastures of the N.W. coast. The Southern gentry from "way down south" put in a representative force, and faces seen belonged to 7FJ, 7OM, 7FM, 7LE, and 7RX can be remembered from the dozen or so members amongst that force.

During the week-end, visits were made to the Railway Workshops, broadcast studios, tx's, and aeradio installations, as well as a visit to the new Trevallyn hydro electric project. The party finally dispersed later Sunday afternoon and we here felt there should be more of such annual get-togethers.

7XW is still hiding 144 Mc. tx's and causing much consternation if not anything else. This time our champion, Ron Rich, was not present and 7GM crawled the last 50 yards or so into the night, practically on all fours, to gain honours.

NORTH WESTERN ZONE

Activity has been very restricted here for some time now, owing to atmospheric conditions with only occasional break throughs on all bands, and the most common being VK2 and VK3 with a few ZLs on 80 mx.

The last few days have been spent in preparing for the first Burnie Industrial Exhibition where the N.W. Zone have a stand, exhibiting examples of mobile and station equipment including a display of various types of components and a large range of valves varying in length from half an inch to twelve inches. Working exhibits are two oscillographs, a hetrodyne frequency meter, and amplifier, and photo cell light relay unit.

Our regular meeting was held recently and a visitor, Mr. C. Terlin, was welcomed, also Mr. R. Nicols who has been an associate member for some years, but has been unable to attend meetings.

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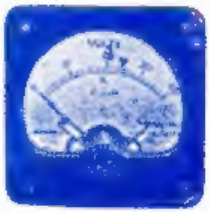

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30-0-30 amps. D.C. **35/-**.

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6K7	Metal	7/11
6H6	"	7/11
6A6	"	7/11
76	"	7/11
A630	"	2/11
EF50	"	8/11
6SH7	"	8/11

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